



The Somali chilled meat value chain:
Structure, operation, profitability
and opportunities to improve the
competitiveness of Somalia's
chilled meat export trade



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The Somali chilled meat value chain: Structure, operation, profitability and opportunities to improve the competitiveness of Somalia's chilled meat export trade

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Abstract

Export-oriented pastoral livestock production is an important source of livelihood of the Somali people. The country is largely food deficient, with imports forming a significant proportion of basic food requirements and which are largely financed through earnings from exports of live animals and meat. The export of meat products offers more avenues for increased earnings and tax revenue by exploiting the available opportunities for domestic value addition, than does live animal trade.

This study characterizes the Somali chilled export meat value chain in terms of actors, institutions and practices, and provides an initial analysis of their profitability in handling four species of livestock. It also canvasses actors' views on opportunities and constraints faced. Its main objective is to provide information that will enable development of strategies to improve the efficiency of the Somali chilled meat export value chain as a way of increasing incomes to market actors.

Primary data used was obtained from a rapid appraisal of chilled meat export marketing value chains in Somalia and a formal survey of market actors (brokers, small-scale traders, agents of exporters, exporters and airfreight operators). Secondary data obtained from a review of relevant literature and interviews with expert informants was also generated.

The study identified a widely-recognized and consistently-applied grading system for slaughter stock. Quality requirements in importing countries were revealed to be well known throughout the chain, in that actors' rankings of attributes were consistent within and between actor stages. Conversely, knowledge of health and safety requirements in the importing countries was known only to exporters. Other inconsistencies throughout the chain included the nature and strength of trading relationships: long-lived at exporter and agent level but short term and cash-based at producer level. Although exporters made payments mostly on the basis of carcass weight, agents of exporters paid based on per head of live animals.

There is evidence of economies of scale, and of financial advantage in species specialization (specifically, goats) by traders. Most actors' aspirations feature expansion, but they report investment funding as their main constraint.

The report presents preliminary recommendations for public and private sectors, many predicated on further study. These focus on value addition and information sharing on what constitutes value, building of product identity and legally protecting its unique status, and coordination to address costs.

I Introduction

I.1 Background and justification

Somalia has an estimated land area of 638 thousand km² and its human population in 2000 was about 8.7 million (UNEP 2007). In 2004, its population of sheep, goats, camels and cattle was estimated at 14.5, 12.8, 7.0 and 5.4 million, respectively (FAO 2008), and the livelihood of Somali people depends heavily on pastoral livestock production (Samatar et al. 1987; Little 1992; Little 2003; FAO/World Bank/EU 2004). Samatar et al. 1987 and Samatar 1992 estimated that about two-thirds of the population is directly or indirectly engaged in the livestock sector and that livestock-related exports account for more than 70% of Somali foreign exchange earnings. As the country is largely in food deficit that is provided for by imports, the foreign exchange earnings from exports of live animals and meat are vital to food security (Little 1992). In general, Somalia's livestock sector is the dominant source of livelihood for the majority of the population and any improvement in this sector will contribute significantly to its economic development and food security.

Traditionally, Somalia's livestock exports have mainly been in the form of live animals (see Negassa et al. 2008). The main export destinations are Middle East countries including Saudi Arabia,¹ Yemen, United Arab Emirates (UAE), Oman, and Qatar. In the 1960s and 1970s, live animal exports from Somalia comprised about 70% of Saudi Arabia's live animal imports² (Samatar et al. 1987). In addition, livestock is exported to East African countries, with neighbouring Kenya the main destination (Little 2003). However, Somalia faces several problems in exporting live animals, key among them being limited market infrastructure, specifically for transport and information transfer. Across a range of developing countries, limited infrastructure has been shown to increase marketing costs (Hummels 2001; Hausman et al. 2005), and the same is likely to be true in Somalia. It also reduces the delivery of high-quality animals to destination markets. In addition, live animal exports increase the risk of cross-border disease transmission, which leads to frequent bans by importing countries.

In contrast, the export of meat products has several advantages over trade in live animals. Aside from avoiding import restrictions and bans on live animals, export of meat products offers opportunities for value addition at origin, particularly employment and income effects. Meat exports also have the potential to widen the tax revenue base from processing, marketing and associated activities involved in preparing chilled meat for export. Meat by-products such as skins and hides provide revenue for value chain actors. Finally, by-products such as offal also provide cheap sources of protein for domestic consumers besides being an additional source of revenue from the domestic market.

Although Somalia currently exports chilled meat in carcass form, there is likely to be potential for further value addition, as evidenced by higher prices paid in export destinations for bulk delivery of higher quality cuts and boneless, packaged and branded product. Improvement in the efficiency of meat production and marketing, geared towards

1. At the time of the survey, shipping was not directly to Saudi Arabia. Animals were shipped from Berbera and Bossaso to Djibouti port (where they were certified), and then shipped from Djibouti to Saudi Arabia. However, with the lifting of import ban by Saudi Arabia, direct shipments resumed in September 2009.

2. Animals imported to Middle East countries for slaughter for religious festivals may be exported onwards to third countries, and so not necessarily consumed domestically. This is a well-developed trade, including frozen zakat ('religious supplies', slaughtered and handled in compliance with religious custom) supplied to poor Muslim countries from the wealthier ones.

export destinations and buyers that reward such value addition, is one promising avenue of approach that offers significant multiplier effects. This statement is supported by Somalia's geographic proximity to the Middle East, which implies lower transportation costs to export markets for chilled meat and meat products. However, effective chilled meat exports are constrained by a number of factors. First, information on importing countries' food safety standards and procedural requirements is scarce. Similarly, importing countries' consumer awareness and preferences on quality and safety remain unknown amongst Somali value chain actors. This situation calls for investigations of the dynamic changes in consumer demand for safe chilled meat products, and development of the ability to respond effectively to these changes among the Somali exporters.

Second, little is known about the incentives (market and non-market) facing those engaged in the Somali chilled meat export value chain. As examples, the profitability of chilled meat has not been studied, nor the distribution of benefits and their poverty impacts, and the factors affecting that distribution. Furthermore, cost-based opportunities for improvements in competitiveness have not been empirically identified. An investigation of costs and returns throughout the chain is therefore necessary, particularly as anecdotal evidence suggested a variety of chilled meat export business models, entailing a variety of organizational and procurement arrangements.

1.2 Objectives

The overall objective of this study is to characterize the Somali export chilled meat sector so as to inform its strategic development and improve its efficiency. An analysis of the complete value chain, including retail distribution systems in destination countries, is beyond the scope of the current study and is deferred to future work. The specific objectives of the current study are to:

1. identify and analyse awareness of quality, health and safety requirements in importing countries amongst Somali chilled meat export value chain actors;
2. establish if there are grades and standards in the marketing of livestock destined for slaughter and export as chilled meat;
3. identify the relationship of such grades to prices received throughout the value chain;
4. estimate costs and benefits for value chain actors, and relationships with organizational and procurement arrangements along the value chain;
5. identify possible approaches to upgrading within the value chain;
6. evaluate value chain actors' access to information on product volumes and prices; and
7. characterize constraints to efficient value chain function in the context of alternative business models.

1.3 Outline of the report

Section 2 of this report presents a conceptual framework of competitiveness and the relevant elements of the Somali livestock value chain, and describes the analytical approach used to answer key questions emerging. Section 3 describes the multiple data collection activities, and section 4 features results of rapid appraisal, surveys and regression analysis of profit margins. Further, section 4 deals extensively with incentives and mechanisms within the Somali chilled meat export value chain. Section 5 offers conclusions and a discussion of the study, with recommendations to public and private sectors, and the research community.

2 Conceptual framework

2.1 Competitiveness

Livestock products exporters from poor countries such as Somalia face competition from exporters in developed countries. The context within which international trade in agricultural and food products occurs is changing, due to changes in exporting and importing countries, and in the nature of competition for export markets. In the developed countries, these changes have brought forth vertical and organizational change due to globalization and technological change (Boehlje and Sonka 1998), rapidly-changing consumer preferences and food industry organization, and associated standards (Farina and Reardon 2000), information exchange issues (Hennessy 1996), transactions costs (Frank and Henderson 1992) and a shifting and multi-faceted regulatory environment (Avermaete and Viaene 2002). The ensuing pressure from these changes has come to bear on small farmers and firms in the agriculture and food system. Each of these change factors is likely to be of consequence in Somalia, and magnified by poor information flows, under-developed market infrastructure, and regulatory processes and institutions that may not factor in these changes.

In the global commercial environment, achievement of competitive advantage is seen by some to be the key to the survival and growth of any firm. Porter's (1980) view is that this might be based on cost (addressing, in the current context, technology and organizational forms), product differentiation (similarly, targeting consumer segments and elements of the regulatory regime), or both. Kaplinsky and Morris (2001) interpret value addition as the task not only of competitive firms but also in the efficiency of all chain elements from production to processing, handling, distribution and sales. According to this view, coordination amongst members in the value chain is very important to establish competitiveness (Hobbs et al. 1998). Boehlje and Sonka (1998) go so far as to say that competition has come to be between chains, rather than between firms. In the developing country context, long value chains are observed to connect producers to export markets, and this is particularly so for pastoralists (e.g. Green et al. (2006) on East Africa), who dominate livestock production in Somalia. Achievement of competitive advantage then implies vertical coordination amongst value chain actors, and efficient information flows. Actors in Somalia's portion of the Middle Eastern market's chilled meat export value chain include livestock producers, brokers, small-scale traders, agents of exporters, exporters, and airfreight operators (Negassa et al. 2008). Critical development issues include the linkage of small herders, small-scale traders and exporters to the international meat market, and their capacity to compete in, and benefit from, international trade. Improving access of small farmers and market actors to existing high value market chains is a necessary, but not sufficient, condition for increasing incomes and combating poverty (World Bank 2008: 133–134). In order to reduce poverty, there is a need to help small farmers and small business by improving the productivity and competitiveness of the value chains. This might address, as mentioned above, poor infrastructure, market failures such as inadequate information flow and the capacity of value chain actors to recognize and exploit opportunities. This study identifies and interprets indicators of market function in the Somali chilled export meat value chain, and the efficiency of operation of chain actors in using the market.

The relevant unit of analysis targeted at competitiveness is the value chain for a given final product demanded by the consumers in domestic or export markets. This assumes that the coordination of the value chain is one of the sources of competitive advantage. In this study, the final product is a chilled meat carcass exported to Middle East countries. The value chain analytical framework is adopted to characterize the chilled meat export trade and determine the constraints and opportunities encountered in enhancing chilled meat exports from Somalia.

2.2 Value chains

Kaplinsky and Morris (2001) identify four elements in a value chain analysis, listed in Table I with explanation of the relevance to the current study. These elements go beyond a simple description of the chain processes, and necessarily require analysis not only of the value added in value chains (i.e. efficiency) but also the distribution of the value added and its retention by specific actors in the chain (i.e. equity). Measurement of value chain equity is not widely undertaken, and has focused primarily on possible exclusion of small farmers from markets (Dolan and Humphrey 2000). Rather than looking at each stage of production as its own entity, this study highlights the relationships within networks of producers, traders, processors/exporters, and the means by which such networks are, or can be, accessed (UNCTAD 2000).

Table I. Approach to value chain characterization

Element of value chain analysis	Items included	Relevance to current study
Systematic mapping of the actors participating in the production, distribution and marketing	Characteristics of actors Profit and cost structures Product flows Risks and constraints Sustainability	Tracing of livestock destined for slaughter and export as chilled meat.
Assessment of governance in the value chain	Structure of relationships and coordination of mechanisms between actors Allocation of responsibility for coordinating activity	Evaluated in terms of: Transaction arrangements among the actors Policy aspects of institutional arrangements that might be targeted to improve capabilities in the value chain
Prospects for upgrading within the chain	Capability of actors to innovate and ensure continuous improvement in product and process development	Identification of opportunities and constraints to upgrading.
The distribution of benefits of actors in the chain	Analysis of margins and profits within the chain	Equity considerations and development contribution

Source: Adapted from Kaplinsky and Morris (2001)

One criticism of the value chain approach is its customarily limited emphasis on the collection and analysis of quantitative data (Rich et al. 2011). The current study addressed such concerns by focusing on collection and interpretation of survey data. The specific tools used are discussed below in terms of information gathered in order to address each of the various study objectives and analysis used.

2.3 Analytical approach

Livestock market actors

In order to study the market actors, they first needed to be identified and characterized according to their role in the export chilled meat value chain. This was achieved by conducting focus group discussions with industry specialists based on guidelines established in earlier work (Negassa et al. 2008).

Quality attributes and measurement

Consideration of value addition requires knowledge of the attributes sought by the market, in this case the export market. These attributes are measured in various ways at different points in the value chain: in live animals, carcasses, and meat products. In the case of live animals, examples of attributes include age of animal, weight, body condition, and body conformation. For carcasses and also meat, the examples of attributes include fat cover, damages to the carcass, and conformation of the carcass.

In this study, it was assumed that the quality requirements of the importing countries are manifested as specific grades and standards within the Somali live animal marketing context. The study thus identified the specific characteristics of each perceived grade in terms of quality attributes, and then established the level of awareness about these among actors along the chain, and how prices varied across grades. A fuller investigation of the agreement between standards used domestically and in the export markets is deferred to later work.

Knowledge of quality preferences in export markets

In the analysis of domestic actors' awareness of importing countries' health and safety requirements, it was assumed that exporters' perceptions are accurate.³ Based on this assumption, this study examines the extent to which quality, health and safety requirements vary across chilled meat importing countries (as perceived by exporters), and variation in awareness of these requirements among actors in the Somali export chilled meat value chain. As for quality standards, the further examination of this assumption is deferred to later work.

Information and its transmission

Access to good quality information plays a key role in the successful participation in markets by value chain actors (Shepherd 1997). The current study identifies sources and uses of information by value chain actors and the extent of its transmission. Transmission of information has conventionally been analysed in the context of the transmission of price movements. However, in the absence of reliable price series, the transmission efficiency of the Somali chilled meat export value chain is examined by surveying the state of knowledge at each chain stage and comparing the results. This analysis extends to identification and measurement of quality of attributes, and familiarity with quality preferences and documentation requirements in export markets.

Transaction arrangements and costs, and seasonality

Owing to the length of the value chain in question, transactions play a significant role in the Somali chilled meat export trade. A key step in understanding the trade is then to document the types of transactions undertaken by the chain agents, the key transaction tasks within the chain, and the magnitude and allocation of their costs. Pingali et al. (2005) found that these factors deterred market entry by small farmers. Barrett et al. (2006) measured various costs specific to livestock marketing and tested their impact on market participation in Northern Kenya and Southern Ethiopia. They found that though modest relative to selling prices, marketing costs had a significant negative effect on market participation and also sales volumes. Unlike Barrett's et al. (2006) study which only focused on livestock producers; the current study addresses other marketing intermediaries and is the first of its kind to address such questions in Somalia and for chilled meat export trade.

Samatar et al. (1988) observed that the two months preceding *Haji* accounted for more than 50% of the exports from Berbera port in 1982, 1983 and 1985. There were also clear variations in numbers of livestock transactions due to religious festivals, with most transactions concentrated around *Ramadan*. This study investigates whether similar seasonal transaction volume variation relationships exist in the case of chilled meat exports at each stage of the chain and as a whole.

Profitability

The current study addresses directly the competitiveness of the chilled meat export value chain by survey analysis of the cost structure at each point in the chain. Although it was anticipated that livestock purchase prices would dominate such costs, the proportion of transactions costs is another indicator of the structure and efficacy of the value chain and the functions of its actors.

³. This essentially employs exporters' perceptions as a proxy for actual regulatory requirements.

Survey data were used to calculate gross profits and gross profit margins (see formulae below) for actors at each stage of the chilled meat value chain and for each livestock species and associated meat type. At the small-scale trader level, costs and returns were measured per sales lot, or per head of slaughter stock. At the exporter level, the gross profits and gross profit margins were computed per lot, or per tonne of chilled meat exported.

$$\text{Gross profit} = \text{Gross revenue} - \text{Total variable costs}$$

It is important to note that costs and revenues often vary seasonally. This study however limited itself to the analysis of costs, revenues and margins from the last completed transaction. It was felt that detailed information on transactions carried out long before the study may not be sufficiently accurate for these kinds of analysis as many livestock marketing agents in Somalia do not keep records.

Financial sustainability and marketing margins

Although gross profit margin is an indicator of a firm's short run financial health, long term performance, and indeed survival, is influenced by fixed costs, from which only limited information was able to be collected in this study. However, marketing margins (see formulae below) were recorded, and are employed here to draw inference about entry and exit. Under perfect competition (particularly free entry and exit), profit maximization by economic agents implies that the marketing margin is equal to the marginal cost of marketing activities (Helmberger and Chavas 1996). It follows that marketing margins higher than marginal marketing costs will attract new entrants, which serves to erode margins as the later entrants (currently engaged in other activities) are likely to operate at higher cost than export chilled meat value chain incumbents (Piggott et al. 2000).

$$\text{Gross profit margin} = (\text{Gross profit} \div \text{Gross revenue}) \times 100\%$$

Competitive status of markets in the value chain

Although evidence on the existence of perfect competition in Somalia is limited, these projections for behaviour at the margin seem reasonable, especially in terms of marginal animals being located unfavourably and/or being of lower quality, and hence being supplied at higher cost. Absence of competitive forces (e.g. barriers to entry) removes the incentive for incumbent firms to reduce marketing costs, and persistent high marketing margins may be further interpreted as evidence of this (Piggott et al. 2000). In addition to the influence of competition, marketing margin has been shown to be affected by changes in output and input prices, marketing costs, marketing infrastructure, technologies used, government marketing policies, and risk and uncertainty in the marketing system (Tomek and Robinson 1990; Helmberger and Chavas 1996). As part of its characterization task, this study will report on these factors. Unfavourable conditions (e.g. highly volatile prices, or the absence of a grading system) lead market actors to demand higher marketing margins in order to enter, or to remain in, particular markets.

Relationship between transaction arrangements and profitability

Wohlgemant (2001) found that marketing margins could be statistically associated with underlying demand and supply factors in the value chain, and their lagged values, imperfect competition, uncertainty, delivery of quality, and transaction costs. A number of studies have examined the relationship between transaction arrangements and factors influencing vertical structure and performance, and the approach taken here is to examine the influence of transaction arrangements on marketing margins. This study employs a regression model with marketing margin as the dependent variable and a number of explanatory variables including institutional arrangements.

Market trends and scaling up

The study reports value chain actors' perceptions of changes in transaction volumes, and compares these along the chain. In addition to reporting experience, the study is forward-looking: it surveys future aspirations, and intentions for scale of operation, and the means of achieving these. Perceived constraints to scaling up are also reported.

Spatial and temporal factors in marketing margins

Formal study of the influence of spatial and temporal (primarily seasonal) on reported marketing margins was not conducted. However, the significance of transport costs and the availability of animals throughout the year were referred to frequently in the study.

3 Data collection

Owing to the perceived complexity of Somalia's chilled meat export value chain, several data sources and collection methods were used in this study. This allowed triangulation (Jick 1979) of information, drawing on:

- a single rapid appraisal of the chilled meat export value chain;
- a survey of key value chain actors (brokers, small-scale traders, agents of exporters, exporters and airfreight operators – see Table 2 for sample sizes) in the chilled meat export value chain; and,
- additional qualitative and quantitative data collected from value chain actors.

Table 2. *Sample selection for the formal survey*

Market actors*	Population*	Sample size
Brokers	210	18 (9)**
Small-scale traders	105	48 (46)
Agents of exporters	8	3 (37)
Exporters	10	6 (60)
Airfreight operators	4	3 (75)

*Based on findings from rapid appraisal. **The figures in the parenthesis are proportion of the samples in the population in per cent.

The rapid appraisal was conducted in the second half of 2006. The survey was conducted between December 2007 and January 2008, a period which followed intermittent bans on imports of Somali livestock and livestock products by several Middle Eastern Countries due to Rift Valley Fever outbreaks. Expert consultations were conducted during both of these periods.

3.1 Rapid appraisal of the chilled meat export value chain

The rapid appraisal served several purposes. It validated the information derived from a literature review that had been used to formulate research hypotheses. It enabled targeting of value chain actors (including compilation of a sample frame), and it formed the basis of the subsequent survey of value chain actors. The rapid appraisal used a combination of methods, including review of documents and records, focus group interviews, key informant interviews and personal observations. The objective was to obtain current and accurate information on the emerging chilled meat export value chain in terms of the functions of the various actors in the value chain and their resources and marketing practices.

3.2 Formal surveys of key actors in the chilled meat export value chain

Formal surveys of a sample of actors from each stage of the chilled meat export value chain accessed data on the actors' basic economic, social and demographic attributes, their resource endowments, and their marketing costs and returns. The sampling approach applied at each stage of the chain depended on the category of market actors interviewed, the associated population, as well as the security situation in the area. The study limited itself to beyond-farm-gate livestock marketing activities by value chain actors.

Table 2 summarizes the market actors, and sampling, for the formal survey. The rapid appraisal established that there were 10 chilled meat exporters in Somalia. At the time of the survey, six of the 10 exporters were active: the other four had ceased operations due to import bans on livestock products from Eastern Africa in a number of countries in the Middle East following an outbreak of Rift Valley Fever that had occurred in 2006. All six active exporters were surveyed: one in Somaliland, one in Puntland and four in central and southern Somalia. The managers of these export businesses were interviewed using a structured questionnaire.

Two of the surveyed exporters (H-Food from Somaliland and the Hiran Global Service Company from southern and central Somalia) used agents to procure live animals for chilled meat export arrangements. Hiran Global Service Company had three agents but the company was closed at the time of this survey and none of the agents were available to be interviewed. H-Food had five agents, three of whom were included in the sample.

The rapid appraisal also identified some 105 small-scale traders, 76 of whom were active at the time of the survey and 48 of whom were included in the sample. In order to derive an appropriate sample size that would capture all the organizational arrangements identified within the subsector, purposive sampling was used in which suppliers to all exporters/slaughterhouses were taken into account. The other factor considered in sampling was the location of the markets in which the traders were operating, in the light of survey resources: those markets least conveniently located for visits by survey staff visiting other chain actors were excluded.

In sampling the brokers, several markets were purposively selected based on security, accessibility (within Somalia) and importance as a source of slaughter stock. Generalization, based on the extent to which these markets are representative of the whole country, is difficult to assess. A list of brokers of chilled meat slaughter livestock was then prepared for each market based on expert consultation. The precise number of brokers is not known but there are thought to be about two brokers per small-scale trader.⁴ Based on this assumption, there are an estimated 210 active brokers in the study areas, of which 18 were randomly selected.

4. Little (2003) estimates two to three brokers per livestock trader.

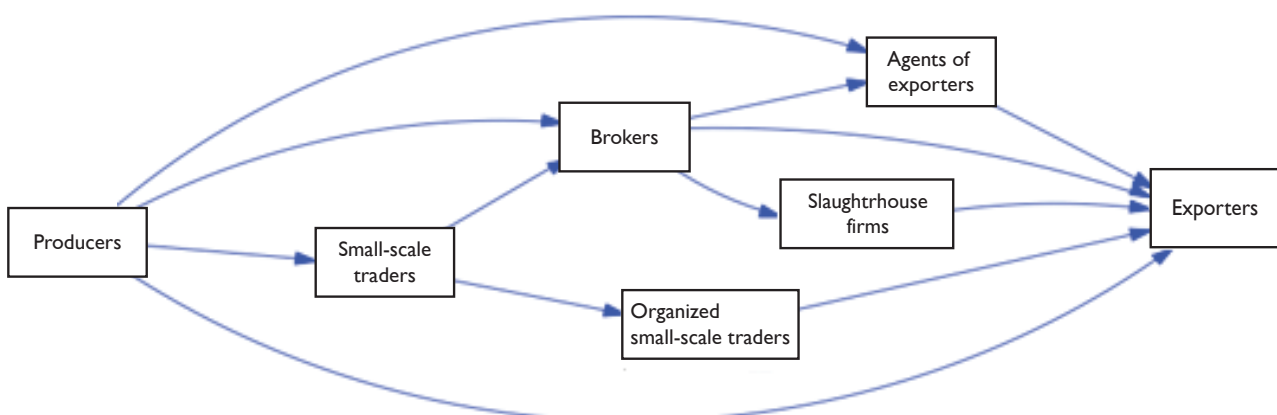
4 Results

4.1 Results of rapid appraisal

Structure and operation of the chilled meat export value chain

A simplified representation of the key actors, and transactions pathways, in the domestic portions of Somalia's chilled meat export value chain is shown in Figure 1. It is notable that these channels can be very long (entailing many sequential transactions) and in some cases brokers are used twice before the animals reach the slaughterhouse (e.g. channel 5).

Figure 1. Key market actors and slaughter stock supply channels for chilled meat export



Exporters

The rapid appraisal established that there are 10 chilled meat exporters in Somalia. The chilled meat exporters' act as the final link between the Somali chilled meat marketing system and the importing countries. They assemble suitable slaughter stock from different regions of Somalia, do the slaughtering, and then deliver chilled meat to importers in the Middle East. To procure animals, some exporters operate through a dedicated network of agents of exporters who are usually from the same clan as the exporter. They employ 3–4 full-time agents on average, as well as other part-time intermediaries.

At the time of the survey, six of the 10 exporters were active: the other four had ceased operations due to import bans on livestock products from Eastern Africa in a number of countries in the Middle East following an outbreak of Rift Valley Fever that had occurred in 2006. All six active exporters were surveyed: one in Somaliland, one in Puntland and four in central and southern Somalia.

Agents of exporters

Agents of exporters source, tend and transfer slaughter animals on behalf of the exporters, based on established rapport and trust. An agent of exporter deals exclusively with one exporter. It has been argued that the emergence of agents of exporters is a direct result of the growth in export trade (Little 2003). The agents operate on part- or full-time basis, and are well known to (in many cases they are relatives of) the exporters. The exporters advance operational funds to the agents or reimburse them for expenses incurred, including livestock purchases.

During the rapid appraisal, it appeared that just two exporters (H-Food from Somaliland and the Hiran Global Service Company from southern and central Somalia) used agents to procure live animals for chilled meat export arrangements. This indicates the existence of alternative arrangements. Hiran Global Service Company had three agents but the company was closed at the time of this survey and none of the agents were available to be interviewed. H-Food had five agents, three of whom were included in the sample.

Small-scale traders

Small-scale traders directly procure live animals in the primary ('bush') or secondary markets,⁵ from livestock producers⁶ or through brokers (see below) and then sell the animals to other traders or directly to exporters. They may or may not use brokers in selling live animals onwards to other traders. Small-scale traders may either act individually or organize themselves into informal groups or companies, apparently to exploit the benefits of social capital and networking. Small-scale traders commonly assemble slaughter stock for collection and transport directly to slaughterhouses, or through brokers and agents of exporters.

The rapid appraisal identified some 105 small-scale traders, 76 of whom were active at the time of the survey and 48 of whom were included in the sample. In order to derive an appropriate sample size that would capture all the organizational arrangements identified within the subsector, purposive sampling was used in which suppliers to all exporters/slaughterhouses were taken into account. The other factor considered in sampling was the location of the markets in which the traders were operating, in the light of survey resources: those markets least conveniently located for visits by survey staff visiting other chain actors were excluded.

5. Primary markets are mostly located near to production areas and secondary markets situated in district and regional capitals. Secondary markets are fed by primary markets in most of the cases geographically disposed as a satellite system. These definitions were discussed and confirmed during the PRA.

6. 'Farm gate' sales are rare: most sales take place in markets.

Brokers

Brokers are not traders *per se* but are market participants facilitating exchange between traders or between traders and other market actors. Brokers are not engaged in the physical handling and management of livestock, nor do they assume ownership of animals. They are found in all markets and one trader usually works with two to three brokers (Little 2003). Brokers live in the same area, and belong to the same clan, as the producer–sellers and so have a community-based mandate. Their facilitation role extends to connecting more remotely-located producers to the market system.

Brokers provide the main link between producers and small-scale traders, between small-scale traders and agents of exporters or, alternatively, between producers and agents of exporters (see Figure 1). In addition to connecting buyers with sellers and acting as payment guarantors, they provide information on volumes, quality and price of livestock: both the available supplies and the demand expressed by buyers. Brokers handle all major livestock species (sheep, goats, cattle and camels). They maintain records of transactions (names of sellers and buyers, species and quality grades⁷ of animals, number of animals per transaction, price) and so have access to the history of past livestock transaction activities in their areas of operation.

Brokers also provide market security, in that they are active in enforcing purchase and sale agreements and property rights, and resolution of conflicts. In Somalia, the absence of functioning public institutions capable of these tasks ensures a role for brokers: along with their market information role, they fill critical public goods gaps. They charge a fee, generally a flat rate per animal (varying by species), which is usually shared equally between buyer and seller.

Not all small-scale traders use brokers: brokers' participation gains significance further up the value chain (e.g. in dealing with exporters). This observation supports the idea that trust-based trading relationships dominate live animal and chilled meat value chains, in that the exporters may not know the sellers/producers that trade with them, and that trading with small-scale traders entails risks to the buyer of non-delivery or supply of inferior animals (Little 2003). Consequently, trust and personal relationships along ethnic and clan lines dominate the livestock marketing system in Somalia. The continued political instability in Somalia contributes to this effect, and trade has become increasingly clan-based (Little 2003).

In sampling the brokers, several markets were purposively selected based on security, accessibility (within Somalia) and importance as a source of slaughter stock. A list of brokers of chilled meat slaughter livestock was then prepared for each market based on expert consultation. The precise number of brokers is not known but there are thought to be about two brokers per small-scale trader.⁸ Based on this assumption, there are an estimated 210 active brokers in the study areas, of which 18 were randomly selected.

Airfreight operators

The chilled meat export trade requires reliable, well-organized and efficient meat transport. Air transport is currently the only available mode for chilled meat. The rapid appraisal revealed that there are four airline companies engaged in the airfreight of chilled meat to markets in the Middle East. These companies are all Somali-owned and have head and branch offices in Somalia and/or the Middle East countries, and overseas offices in Dubai. At the time of the survey only three airfreight operators exported chilled meat from Somalia: all three were selected.

7. Loosely, a quality level that is somewhat standard across the study area.

8. Little (2003) estimates two to three brokers per livestock trader.

4.2 Results of formal survey

Market actors

Table 3 summarizes the demographic and business profiles of the various market actors involved in the Somali chilled meat export value chain. It is notable that in the final sample none of the sampled exporters, agents of exporters, small-scale traders, brokers and airfreight operators were women. The rapid appraisal, when the sampling frame for the formal survey was drawn together with the different stakeholders, confirmed that traditionally females are observed to engage much more in domestic livestock trade than in export. This effect appears to be pronounced in the chilled meat export trade.

Table 3. Demographic and business profiles of market actors in the chilled meat export value chain

Characteristic	Value-chain actors			
	Small-scale traders	Brokers	Agents of exporters	Exporters & slaughterhouse operators
Average age (%)				
Less than 30 years	6	0	0	17*
30 to 45 years	56	72	33	83
Over 45 years	38	28	67	0
Years of formal education	3.5 (4.6)	1.9 (3.1)	5.3 (4.6)	10.6 (4.0)
Type of business ownership (%)				
Sole proprietorship	52	–	33	17
Partnership	0	–	67	67
Joint venture	38	–	0	0
Share company	10	–	0	0
Business start-up (%)				
Self-started	50	–	100	100
Purchased	31	–	0	0
Inherited	2	–	0	0
Others	8	–	0	0
Language spoken (%)				
Somali	100	100	100	–
Arabic	8	33	33	–
English	6	6	0	–
Other	0	6	0	–
Language read and written (%)				
Somali	85	72	100	–
Arabic	25	33	0	–
English	13	6	0	–
Previous work experience (%)				
Small-scale trader (Gadley/jeeble)	42	17	100	–
Broker (dilaal)	13	–	100	–
Gedisley/jeeble		44	–	–
Livestock producer	17	33	33	–
Generic livestock worker	4	17	0	–
Other livestock trading role	6	6	0	–
Average no. of years of trading experience				
Sheep	9.5 (4.4)	14.3 (8.1)	4.5	6.6
Goats	8.9 (4.5)	–	4.1	6.6
Cattle	8.3 (4.1)	–	0.0	5.1
Camels	8.3 (2.9)	–	0.0	4.7
Engaged in other economic activity (% yes)	27	39	67	50
This activity finances other activities (% yes)	13	–	67	–
Number of observations	48	18	3	6

* For exporters, the age referred to were those of the business managers and not exactly those of the business owners; i.e. the owners tend to employ younger and more educated managers to run their capital intensive businesses.

Source: Survey data

Standard deviations in parentheses; – denotes data not available

Most of the 48 small-scale traders surveyed dealt with goats (90%) and sheep (77%) while only a few dealt with cattle (8%) and camels (12%). Analysis of the number of animals handled per annum indicated a high rate of turnover for these traders. For instance, in 2006 a small-scale trader on average handled some 5344 goats, 531 sheep, 161 camels and 40 heads of cattle.

Assets of value chain actors

The business, social and human capital of market actors is summarized in Table 4, and differs substantially between actors. The majority of small-scale traders surveyed were not members of any formal livestock trade association while about 60% of the exporters were. The average working capital for small-scale traders and agents of exporters was not available from the survey due to non-responses by most respondents but that of the exporters was about USD 170,000. Generally, fewer small-scale traders had physical capital assets as compared to exporters and their agents.

Table 4. Business assets of market actors

Business asset	Small-scale traders	Agents of exporters	Exporters & slaughterhouse operators
Human capital			
Number of permanent employee	–	–	125.5 (103)
Number of temporary employee	–	–	1 (2.4)
Social capital			
Member of livestock trade associations			
Formal associations (% yes)	4	0	60
Informal associations (% yes)	0	33.3	0
Annual membership fee paid (% yes)	0	0	40
Annual membership fee paid (USD)	–	–	230
Working capital (USD)*	–	–	171,060 (181,533)
Physical capital			
Own transportation assets			
Lorry (% yes)	0	33	0
Vehicle (% yes)	2.1	67	33
Refrigerated van (% yes)	–	–	33
Communication assets			
Phone (% yes)	2.1	67	83
Fax (% yes)	0	0	17
Mobile (% yes)	85	100	83
E-mail (% yes)	2.1	0	33
Computer (% yes)	0	0	67
Current market value of all assets owned (USD)	114.3 (512.8)	5593.3 (7891.5)	381,975 (268,363)

Standard deviations in parentheses.

– Denotes data not available.

*Cash and inventory on hand.

Knowledge of quality requirements and measurement

It was observed that descriptions of quality attributes in respective grades in a species were very similar across market actors, which is an indication of flow of information on quality. Market actors consistently described the quality of animals according to grades: 'grade 1', 'grade 2' and 'grade 3'. To characterize the grades, marketing agents were asked to specify the levels of different quality attributes embodied in animals of different grades. Grades achieved reportedly depend primarily on the age, weight and body condition of the animal. According to the small-scale traders and brokers, grade 1 sheep and goats on average weighed 12–13 kg compared to 8–12 kg for grade 2 and 6–7 kg for grade 3 (Table 6).⁹ The body condition of grade 1 animals was consistently described as 'excellent' compared to 'good' and 'fair' for grades 2 and 3 animals respectively. This result was somewhat consistent across all types of market actors

9. Results of a t-test showed that the weights of sheep and goats of various grades as stated by brokers were not significantly different from the weights reported by small-scale traders.

and for all livestock species. In the descriptions of grades, the most frequently-cited age brackets of slaughter animals in each species showed little variation across grades (Tables 5 and 6). On average, the most frequent age ranged 1–2 years for sheep and goats, and 2–3 years for cattle and camels.

Table 5. Percentage age distribution for different grades of slaughter animals, by species and value chain actor

		Sheep			Goats			Cattle			Camel		
		Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3
Small-scale traders	<1 year	18	6	0	8	0	0	0	0	0	0	0	0
	1 years to <1.5 years	23	18	19	38	28	28	0	0	0	0	0	0
	1.5 years to <2 years	45	57	63	50	61	61	0	0	0	0	0	0
	2 years to <2.5 years	14	18	19	4	6	6	67	67	67	80	80	80
Brokers	2.5 years to 3 years	0	0	0	0	6	6	33	33	33	20	20	20
	<1 year	17	8	13	7	0	0	–	–	–	0	0	0
	1 years to <1.5 years	25	50	13	47	36	13	–	–	–	0	0	0
	1.5 years to <2 years	42	25	50	13	18	37	–	–	–	0	0	0
Agents of exporters	2 years to <2.5 years	17	17	25	33	45	50	–	–	–	0	0	0
	2.5 years to 3 years	0	0	0	0	0	0	–	–	–	100	100	100
	<1 year	0	–	–	0	–	–	–	–	–	–	–	–
	1 years to <1.5 years	100	–	–	33	–	–	–	–	–	–	–	–
Exporters	1.5 years to <2 years	0	–	–	67	–	–	–	–	–	–	–	–
	<1 year	40	25	0	50	0	0	0	0	0	0	0	0
	1 years to <1.5 years	20	25	33	17	33	33	0	0	0	0	0	0
	1.5 years to <2 years	20	25	33	33	67	67	0	0	0	0	0	0
	2 years to <2.5 years	20	25	33	0	0	0	50	50	50	0	0	0
	2.5 years to 3 years	0	0	0	0	0	0	50	50	50	100	100	100

Table 6. Average weight and price of different grades of slaughter animals

		Sheep			Goats			Cattle			Camel		
		Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3
Small-scale traders	Weight (kg)	12	9	7	12	8	7	97	86	63	114	99	88
	Price (USD)	14	12	10	15	12	10	127	105	90	140	122	108
Brokers	Weight (kg)	12	12	7	13	10	6				98	98	73
	Price (USD)	14	11	10	15	13	15				140	117	98
Agents of exporters	Weight (kg)	17			15								
	Price (USD)	17			20								
Exporters	Weight (kg)	9	7	7	8	8	6	100	86	73	150	120	100
	Price (USD)	14	8		12								

Only male animals are slaughtered for export. Breed and body conformation were rarely mentioned as important attributes in the grading of slaughter animals for chilled meat export, perhaps an indication that the slaughtered stock were yet to mature. The means of age and weight for first-grade sheep and goats reported by exporters were lower than corresponding figures from the samples of the other value chain actors. The low average age and weight for grade 1 animals given by the exporters are attributed to statistical bias (one exporter dealt in very young sheep and goats—averaging 4 months of age) probably associated with specific contracts.

A notable result in Table 5 is some inconsistency among value chain actors' claimed proportions in each grade. It is not clear whether the different proportions represent inconsistency in reporting, the need to fatten and finish animals throughout the value chain, or presence of animals other than those destined for export.

Figures 2 and 3 show the relationship between grade and price of export slaughter animals. Higher-grade animals generated higher prices. According to the surveyed small-scale traders, a 1st grade camel on average fetched USD 140 compared to USD 122 for a 2nd grade and USD 108 for a 3rd grade. The average prices for cattle were USD 127, USD 105 and USD 90 for a 1st, 2nd, and 3rd grade, respectively. First grade goats and sheep fetched USD 15 and USD 14, respectively compared to USD 12 for 2nd grades and USD 10 for 3rd grades. A one-way analysis of variance suggests the following: for small-scale traders, there is no strong price–grade relationship for cattle and camels; but the opposite applies to reports by brokers. The two analyses agree on a strong price–grade relationship for sheep and goats.

Figure 2. Mean prices of different grades of animals slaughtered for export as reported by small-scale traders

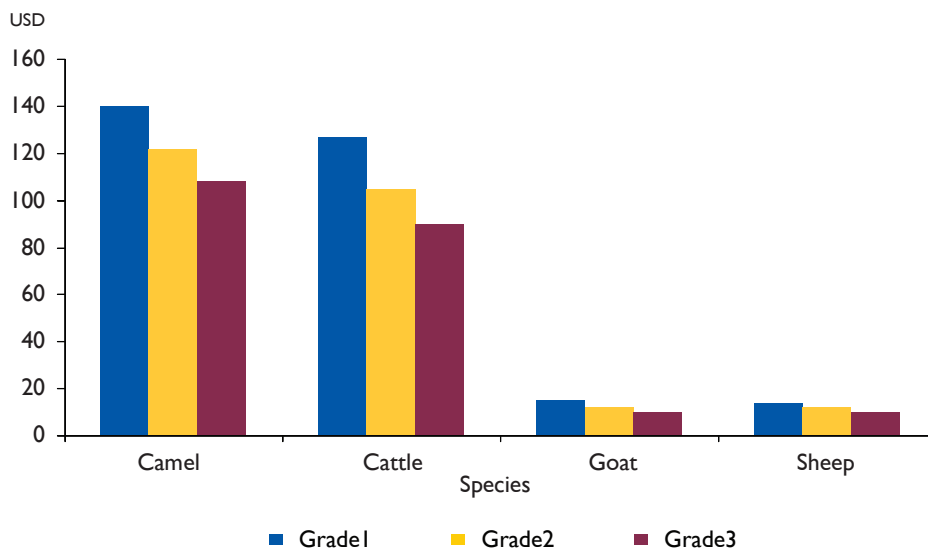
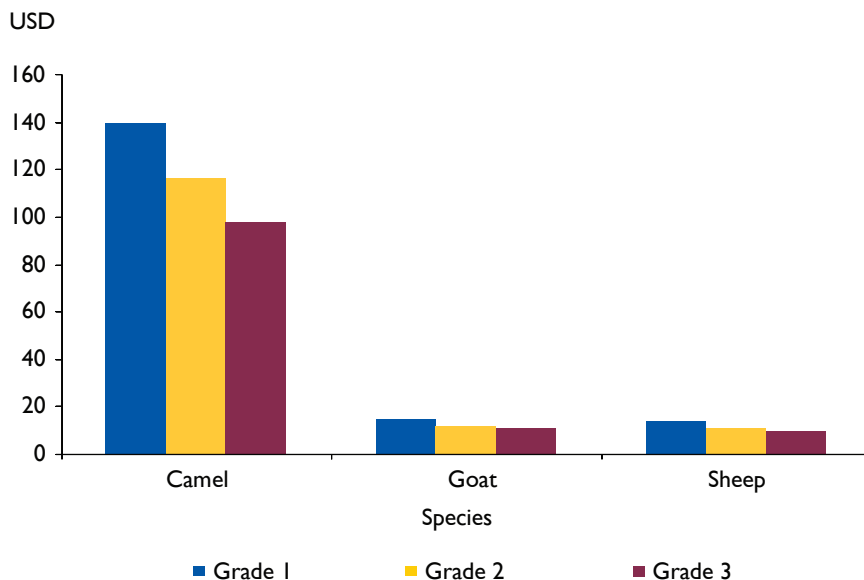


Figure 3. Mean prices of different grades of animals slaughtered for export as reported by brokers



To further gauge the relative importance of the various quality attributes used in the selection of livestock for sale to chilled meat exporters, the various marketing agents were asked to rank them, with the most important one designated I. The order of ranking of the different attributes was consistent across value chain actors, and in their application across species. The set of attributes that were highly ranked included sex, age, weight and body condition (Table 7). Breed and conformation tend to be of little importance in the grading system, as demonstrated by their low ranking.

Table 7. Ranking of different quality attributes considered in the selection of livestock marketed to chilled meat exporters*

	Species	Value chain actor			
		Small-scale traders	Broker	Agents of exporters	Exporters
Age	Sheep	3	3	2	2
	Goats	3	3	2	2
	Cattle	3			2
	Camel	3	3		3
Weight	Sheep	3	3	3	3
	Goats	3	3	3	3
	Cattle	3			4
	Camel	3	2		2
Breed	Sheep	6	4	6	6
	Goats	6	4	6	6
	Cattle	6			5
	Camel	6	5		6
Body condition	Sheep	3	2	1	3
	Goats	3	3	1	3
	Cattle	4			3
	Camel	4	4		4
Sex	Sheep	1	1	1	1
	Goats	1	1	1	1
	Cattle	1			3
	Camel	1	1		1
Conformation	Sheep	6	4	4	6
	Goats	6	4	5	6
	Cattle	6			6
	Camel	5	5		5

Awareness of quality and safety requirements in export countries

Value chain actors were asked to describe the quality and safety/health preferences and/or requirements prevailing in countries¹⁰ to which meat from Somalia is exported. The description of the quality and safety preferences in export countries by small-scale traders, brokers and agents of exporters closely matched that of exporters (Table 8). This similarity in the descriptions of quality requirements across different types of marketing agents suggests efficient transmission of this type of information along the value chain. As for exporters, all small-scale traders, brokers and agents of exporters were well aware that in the countries to which meat from Somalia is commonly exported, only chilled carcasses of male animals are exported and that a certification for Halal slaughter is mandatory. Some countries such as Saudi Arabia and also some importing agents (regardless of country) accept import of male carcasses only. Importers may inspect carcasses (requiring, for example, that the testicles are left on the carcass) to confirm that the meat is solely from male animals. In addition, Somalia itself has a long-standing prohibition on export of female animals.

10. Countries that import chilled carcasses from Somalia include Oman, UAE, Saudi Arabia (camel meat only) and other Gulf states. It is notable that during the study period Saudi Arabia maintained a ban on imports of livestock and chilled meat products from Somalia due to Rift Valley Fever. However, camel meat from Somalia was exempted, perhaps because imports from other countries were insufficient to meet local (Saudi) demand.

Table 8. Quality attributes required*—Perceptions of various value chain actors

	Destination country					United Arab Emirates					Gulf /Arab countries			
	Sheep	Goat	Cattle	Camel	Sheep	Sheep	Camel	Sheep	Goat	Cattle	Camel	Sheep	Goat	Camel
Preference for livestock species (mean rank)														
Small-scale traders	2.1 (0.5)	1.0 (0)	2.3 (1.2)	4	—	1.0 (0)	—	1.9 (0.2)	1.1 (0.2)	3.0 (1)	—	—	—	—
Brokers	2 (0)	1 (0)	—	—	—	1 (—)	—	2 (0)	1 (0)	—	—	—	—	—
Agents of exporters	2.0 (—)	2.0 (—)	—	—	—	—	—	1.3 (0.5)	1.0 (—)	—	—	—	—	—
Exporters	2 (0)	1 (0)	—	—	—	—	—	2 (0)	1 (0)	3 (—)	—	—	—	—
Small-scale traders	2.0 (0.3)	2.1 (0.4)	2.5 (0.9)	2.8 (0.4)	—	2.3 (0.4)	—	1.4 (0.4)	1.4 (0.4)	2.8 (1.0)	—	—	—	—
min	1.2	1.5	2.0	2.5	—	2.0	—	0.8	0.8	2	—	—	—	—
max	2.5	3	3.5	3.0	—	3.0	—	2.0	2.5	4	—	—	—	—
Brokers	1.8 (0.3)	2 (0.5)	2 (—)	—	—	2 (—)	—	1.5 (0.4)	1.5 (0.5)	—	—	—	—	—
min	1.5	1.5	2.0	—	—	2.0	—	1.0	1.0	—	—	—	—	—
max	2.0	3.0	2.0	—	—	2.0	—	2.0	2.0	—	—	—	—	—
Agents of exporters	2 (—)	2 (—)	—	—	—	—	—	1.2 (0.1)	1 (—)	—	—	—	—	—
min	2.0	2.0	—	—	—	—	—	1.0	1.0	—	—	—	—	—
max	2.0	2.0	—	—	—	—	—	1.3	1.0	—	—	—	—	—
Exporters	1.8 (0.3)	1.7 (0.8)	—	—	—	—	—	1.3 (0.7)	1.0 (0.4)	2 (—)	—	—	—	—
min	1.5	1.0	—	—	—	—	—	0.3	0.3	2.0	—	—	—	—
max	2.0	2.5	—	—	—	—	—	2.0	1.5	2.0	—	—	—	—
Small-scale traders	12.6 (4.0)	12.6 (4.0)	86.7 (15.3)	110 (14.1)	—	88.6 (9.0)	—	9.2 (1.5)	8.7 (2.0)	85 (18.0)	—	—	—	—
min	8.5	8.5	70.0	100.0	—	80.0	—	7.5	7.0	65.0	—	—	—	—
max	25.0	25.0	100.0	120.0	—	100.0	—	15.0	16.5	100.0	—	—	—	—
Brokers	10.2 (4.1)	11.5 (4.5)	—	—	—	—	—	9.3 (1.8)	7.9 (0.7)	—	—	—	—	—
min	8.0	7.0	—	—	—	—	—	8.0	7.0	—	—	—	—	—
max	17.5	17.5	—	—	—	—	—	13.0	9.0	—	—	—	—	—
Agents of exporters	15 (—)	15 (—)	—	—	—	—	—	7.8 (1.2)	9 (—)	—	—	—	—	—
min	15.0	15.0	—	—	—	—	—	6.5	9.0	—	—	—	—	—
max	15.0	15.0	—	—	—	—	—	9.0	9.0	—	—	—	—	—
Exporters	9.5 (0.7)	10.3 (1.5)	—	—	—	—	—	7.6 (2.4)	7.2 (2.2)	45 (—)	—	—	—	—
min	9.0	9.0	—	—	—	—	—	3.8	3.8	45.0	—	—	—	—
max	10.0	12.0	—	—	—	—	—	10.0	10.0	45.0	—	—	—	—
Small-scale traders	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Brokers	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Agents of exporters	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Exporters	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Small-scale traders	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Brokers	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Agents of exporters	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Exporters	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Sex of the animal (% male)														
Small-scale traders	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Brokers	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Agents of exporters	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Exporters	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Halal slaughter certificate (% yes)														
Small-scale traders	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Brokers	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Agents of exporters	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—
Exporters	100.0	100.0	100.0	100.0	—	100.0	—	100.0	100.0	100.0	—	—	—	—

Goats were ranked by all value chain actors as the most preferred species in Oman, UAE and other Gulf states. Sheep were commonly ranked second and cattle third. The perceived order of preference of species for meat in different countries is reasonably constant across the different value chain actors, which further indicates effective transmission of information (in this case, about demand) along the value chain. All the various value chain actors reported that the preference for sheep and goats in Oman is inclined towards relatively older (1–3 years) and heavier (7–25 kg dressed weight) animals than that in UAE (on average 0.3–2.5 years old and weighing 4–17 kg dressed weight).¹¹ Owing to small numbers of observations, statistical tests of similarity in actors' preferred attributes were not always possible. However, for sheep and goat in Oman and UAE, both the preferred age and weight as described by small-scale traders were significantly not different from the values reported by brokers.

Foreign trade regulations of many countries require meat exporters and/or importers to produce a number of health and administrative certificates before their products are allowed to cross an international frontier.¹² All of the surveyed exporters were well informed about the requirement for these documents, whereas just a small minority of the small-scale traders (up to 32%), brokers (just 1 out of the 18 interviewed) and agents of exporters (only 1 of the 3 persons interviewed) did so.

It is possible that exporters do not pass this information to the other value chain actors, or that the latter do not seek that information from the former since it is of little importance to agents whose operations are restricted to activities within Somalia. The majority of exporters to the UAE indicated that many health and safety requirements have been introduced only in the last four years, and that enforcement has become stricter. There are therefore strong indications that a direct study of importing countries' preferences and regulatory systems is needed.

Targeted attributes when buying animals by various marketing agents

Information was collected about quality preferences throughout the chain during purchase of slaughter animals for chilled meat export. A clear result is that preferred attributes in slaughter animals being purchased closely matched the perceived quality preferences/requirements in the countries to which the chilled meat is exported. Attributes that attracted a lot of interest from the value chain actors include sex of animal, age, weight and body condition. Only male animals were purchased to be slaughtered for export in line with the claim that some importers in the Middle East accept carcasses of male animals only and also the long standing ban on export of female animals in Somalia itself. Likewise, the preferred age and weight of slaughter animals throughout the chain fall closely within the ranges described as the most preferred in the export countries (Table 8). Sheep and goats of age 1–2 years weighing 7–10 kg and cattle and camels of age 2–3 years weighing 100–125 kg for cattle and 75–100 kg for camel were the most preferred (Tables 9 and 10). On the basis of body condition, grade 1 and 2 animals were the most frequently preferred across species. The age of an animal, its weight and condition were, most frequently, subjectively assessed by eye. Inspection of teeth to assess age, manual hefting of small ruminants to assess weight, and examination of fill-out of specific anatomical parts to assess condition were also reported as common practice. The reported preferred quality attributes were very similar across the different types of market agents. Breed and body conformation were not frequently mentioned as important considerations when purchasing animals slaughtered for meat export.

11. The observed wide weight ranges are likely to reflect differentiated markets in those countries, serving home consumption, restaurants, catering etc.

12. These documents include certificates of origin, official health certificates (issued by a government or private veterinarian, or both), stamps on carcasses, certificates concerned with ingredients and labelling, and municipalities' certificates for slaughterhouses.

Table 9. Percentage of marketing agents' citing preference* for animals of different ages

		Small-scale traders	Brokers	Agents of exporters	Exporters
Sheep	Less than one year	0	0	0	17
	One year olds	35	40	100	33
	Over one year to 1.5 years	43	33	0	17
	Over 1.5 year to 2 years	22	27	0	17
	Over 2 years	0	0	0	17
Goats	Less than one year	0	0	0	20
	One year olds	37	25	33	40
	Over one year to 1.5 years	51	58	67	40
	Over 1.5 year to 2 years	9	17	0	0
	Over 2 years	2	0	0	0
Cattle	Less than one year	0	NA	NA	0
	One to two year olds	75	NA	NA	50
	Two to three year olds	25	NA	NA	50
	Over three years	0	NA	NA	0
Camel	Less than one year	0	0	NA	0
	One to two year olds	86	100	NA	0
	Two to three year olds	14	0	NA	100
	Over three years	0	0	NA	0

*Preferred age of animals purchased.

Table 10. Percentage of marketing agents' citing preference for animals of different weight

		Small-scale traders	Brokers	Agents of exporters	Exporters
Sheep	Up to 7 kg	8	9	0	33
	Over 7 to 10 kg	64	55	0	33
	Over 10 to 13 kg	14	9	0	0
	Over 13 to 16 kg	8	9	0	0
	Over 16 kg	6	0	100	33
Goats	Up to 7 kg	14	21	0	60
	Over 7 to 10 kg	64	43	0	20
	Over 10 to 13 kg	2	7	0	0
	Over 13 to 16 kg	14	14	67	0
	Over 16 kg	5	14	33	20
Cattle	Less than 50 kg	0	NA	NA	50
	50 to 75 kg	33	NA	NA	0
	Over 75 to 100 kg	0	NA	NA	0
	Over 100 to 125 kg	67	NA	NA	50
	Over 125 kg	0	NA	NA	0
Camel	Less than 50 kg	0	0	NA	0
	50 to 75 kg	0	0	NA	0
	Over 75 to 100 kg	100	100	NA	100
	Over 100 kg	0	0	NA	0

Transaction arrangements

Information generated about procurement arrangements (targeting method and timing of payments) between small-scale traders and their suppliers are presented in Table 11. It is apparent that livestock producers were the principal source of slaughter stock to the small-scale traders surveyed. Overwhelmingly, traders paid for stock received on the spot, in cash per head of live animals. Another notable result is the prevalence of brokers in transactions.

Table 11. Transaction arrangements for chilled meat export between small-scale traders and their livestock suppliers

Contractual arrangements	Value chain actor from whom the small-scale traders purchase	
	Livestock producers	Other small-scale traders
Source of livestock (% yes)	100	71
Relative importance based on quantity of animals obtained in 2006 (average rank)	1.2 (0.4)	1.9 (0.5)
Basis of payment (% yes)		
Per head of live animal	100	100
Per head of live animal weight	0	0
Per carcass	0	0
Per carcass weight	0	0
Others	0	0
Timing of the payment (% yes)		
Cash on spot	98	94
When exporter accepts animals	0	0
After carcass exported	4	8
Other	4	3
Relationship with suppliers (%)		
Regular	8	32
Not regular	92	68
Price determination (%)		
Bargaining through a broker	100	100
Set beforehand	0	0
Others	0	0

Standard deviation in parentheses.

For stock sales (Table 12), most (79%) small-scale traders sold their slaughter stock to exporters, with the remainder selling to agents of exporters on a contract basis. Most exporters paid on the basis of carcass weight. Payment to small-scale traders by exporters based on carcass weight not only served to reduce the risk to the exporter for quantity of goods delivered but also explains why the weight of an animal was regarded importantly by the small-scale traders when making their purchases of animals. If, when negotiating the purchase price, a trader overestimated the weight of an animal by a big margin, the risk for making a loss when the animal was finally sold to the exporter became high. On the other hand, all small-scale traders who sold animals to agents of exporters were paid on per head basis (recall that even for agents of exporters, weight of an animal was an important attribute when purchasing animals). This dichotomy in sales procedure requires further study as it (i) may identify the role in the value chain for fattening and finishing operations and (ii) may reflect the inability of sellers to guess at weights, and hence require buyers to use per head pricing. Alternatively, and with further development implications, sales behaviour may revolve around numbers rather than market value: specifically in response to droughts or cash needs at any given time.

In contrast to the irregular business relationship that small-scale traders had with their slaughter stock suppliers, all traders reported having regular business relationships with the buyers of their slaughter stock, of duration averaging over 8 years in the case of exporters, and 3.5 years for agents of exporters.

Seasonality of livestock sales by small-scale traders

Examination of weekly purchases of slaughter stock (Table 13) reveals no clear seasonal patterns. A different pattern might be observed for live animal export, in line with religious festivals (note that Ramadan features the highest volumes in all cases).

Table 12. Transaction arrangements between small-scale traders and buyers of slaughter stock

Contractual arrangements	Exporters	Agents of exporters
Buyers (% yes)	79	21
Basis of payment (%)		
Per head of live animal	11	100
Per carcass	3	0
Per carcass weight	87	0
Others	0	0
Timing of the payment (%)		
Cash on spot	34	100
After animals are accepted by exporter	5	10
After carcasses are sold	21	30
Others	44	50
Dominant type of business relationship (%)		
Regular	100	100
Length of business relationship (years)	8.2 (3.3)	3.5 (0.4)
Livestock species supplied (% of supplying respondents)		
Sheep	82	70
Goats	89	90
Camels	18	0
Cattle	5	0
Buying price determination (%)		
Bargaining through a broker	8	100
Determined by seller beforehand	89	0

Standard deviation in parentheses.

Table 13. The effect of seasons and religious festivals on the sale of livestock by small-scale traders

Season/festival	Weekly average number of slaughter stock (heads)			
	Sheep	Goats	Camels	Cattle
Long dry season (Jiilaal): Jan–March	32.5 (23.8)	355.6 (213.5)	33.4 (20.9)	35.0 (21.2)
Long rainy season (Gu): April–June	38.3 (64.5)	320.0 (200.5)	29.0 (19.9)	32.5 (24.7)
Short dry season (Xagaa): July–August	30.9 (23.4)	341.3 (210.8)	31 (22.6)	35.0 (21.2)
Short rainy season (Deyr): Sept–Dec	38.0 (64.4)	321.9 (196.4)	30.4 (21.9)	32.5 (24.7)
Ramadan (Id al Fitr)	50.3 (82.5)	398.8 (250.2)	37.0 (27.6)	38.5 (30.4)
Haji (Id al Ada)	0	18.8 (89.6)	1.4 (3.8)	0
Maulid	0	0	0	0

Standard deviation in parentheses.

Access to market information on chilled meat export

Analysis of actors' reported access to market information for chilled meat export¹³ is presented in Table 14). Access to market information is seen to vary along the chain, and by type of information. All market actors claimed to have access to information on prices, suppliers and availability of livestock, and over 80% of all market actors had information on buyers, demand and availability and suitability of each species. Access to information on health and safety requirements in export countries varied widely, with exporters claiming greater access to this information than did small-scale traders and agents of exporters. Likewise, only exporters claimed to be very well aware of the prices of chilled meat carcasses in the export countries, compared to just 33% of the agents of exporters, 13% of small-scale traders and none of the brokers surveyed. This suggests poor/slow transmission of improved prices of carcasses in export countries to value chain actors in Somalia.

13. Negassa et al. (2008) discuss the sources of market information for live animal export trade in Somalia.

Table 14. Proportion of market actors involved in chilled meat export with access to market information

Type of market information	Access to information (% yes)			
	Small-scale traders	Brokers	Agents of exporters	Exporters
Market price of livestock for slaughter for export	100	100	100	100
Suppliers of livestock for slaughter for export	100	100	100	100
Availability of livestock species for slaughter for export	100	100	100	100
Availability of suitable grades for slaughter for export	100	94	100	100
Demand situation in export markets	83	82	100	100
Health and safety requirements in export countries	33	6	33	100
Quality requirements in import countries	83	76	100	100
Prices of carcasses in import markets	13	0	33	100

Marketing costs and returns

Small-scale traders

Table 15 presents the marketing costs, revenues and gross profits for the most recent batch of animals sold by small-scale traders to be slaughtered for export. As seen in the market actors subsection above, the greatest number of small-scale traders dealt in sheep and goats, with rather fewer handling cattle and camels. For all species, the major component of the variable costs was animal purchase cost, which accounted for more than 85% of the total variable costs of the live animal transactions. The chief source of animals for the small-scale traders surveyed was producers. It is important to note that the prices paid by small-scale traders to their suppliers include the part of marketing costs borne by the suppliers. While data on marketing costs for producers was not collected during this study, in Kenya and Ethiopia this has been estimated to be up to 25% and 10% of the prices received by the producers for small ruminants and large stock, respectively (Barrett et al. 2006).

The other significant component of variable costs for small-scale traders was the transaction costs.¹⁴ These collectively accounted for 8%, 4%, 7% and 3% of the variable costs of selling goats, sheep, camels and cattle (respectively). The average variable costs incurred by individual traders were observed to vary widely, indicating a range of competitive positions in the market.

On average, profit margins for the small-scale traders were low (USD 1/animal for sheep and goats, USD 4/head of cattle, and USD 17/camel) suggesting competitive pressures at this stage of the value chain. The small margins for the small-scale traders also appear commensurate with the main role that they perform, that is: buying and selling of animals with little if any other type of value addition. The profit margins however varied widely,¹⁵ with minima negative for both sheep and goats. Given the large volumes of slaughter animals sold by a small-scale trader each year (on average over 5700 sheep and goats, 160 camels and about 40 heads of cattle), total returns to these traders was projected to be high (on average USD 8770/trader in 2005 and USD 8675 in 2006).

A feature of Table 15's results is that they vary significantly with lot size. Although no statistical test of association was possible with the limited numbers of observations, this result has some intuitive support and is deserving of further investigation.

14. As estimated by respondents.

15. A plausible explanation of the observed high standard deviations in the survey data is the variation in the age and size of animals marketed. An interesting extension to this work would be a comparison of gross margins calculated per tonne of meat exported, with that calculated per head of live animals, and per tonne of live animals.

Table 15. Marketing costs, revenues and gross profits for small-scale traders for the most recently completed live animal transactions for chilled meat export (December 2007 to January 2008)

	Goats			Sheep			Camels			Cattle		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Lot size (number)	211 (214)	15	905	63 (153)	2	678	23 (9)	12	32	32 (12)	22	45
Gross revenue/lot (USD)	2986 (3140)	315	14380	887 (2252)	34	10206	3210 (1218)	1218	4234	4461 (2245)	2543	6930
Variable costs/lot (USD)												
Animal Purchases	2456 (2771)	300	13,750	763 (1937)	33	8775	2490 (918)	1154	3209	4061 (2128)	2333	6438
Loading costs	7 (11)	0	46	2 (7)	0	30	0 (0)	0	0	0 (0)	0	0
Offloading costs	6 (9)	0	41	1 (3)	0	13	0 (0)	0	0	0 (0)	0	0
Seller search costs	11 (12)	0	48	3 (6)	0	30	10 (7)	3	25	8 (4)	3	10
Broker fees	61 (83)	0	354	18 (36)	0	152	96 (44)	45	150	81 (28)	50	102
Market levies paid	102 (172)	0	905	21 (59)	0	270	115 (70)	45	231	74 (52)	30	132
Water and feed costs	17 (24)	0	136	4 (8)	0	30	38 (16)	15	68	39 (25)	20	68
Value of slaughter stock rejected	19 (66)	0	413	4 (15)	0	60	0	0	0	0	0	0
Trekking/trucking/caretaker costs	103 (164)	0	654	9 (24)	0	107	77 (85)	16	217	59 (36)	20	91
Total variable costs/lot (USD)	2781 (3050)	310	14515	823 (2020)	33	9097	2826 (1055)	1304	3840	4323 (2165)	2463	6699
Gross profit/lot (USD)	205 (315)	-135	1243	64 (241)	-28	1109	384 (225)	119	701	138 (81)	80	231
Total variable costs/head (USD)	14 (3)	7	21	13 (3)	10	19	12.3 (18)	109	161	130 (19)	112	149
Gross profit/head (USD)	1 (1)	-1	4	1 (1)	-1	2	0.17 (9)	6	35	4 (1)	4	5
Gross profit margin/lot per head (%)	7 (7)	-7	23	4 (7)	-6	16	12	5	18	3 (1)	3	3
Number of observations	41			21			7					3

Source: Survey data

Standard deviation in parentheses

Chilled meat exporters

Tables 16–18 present a schedule of costs, revenues and margins (for the most recent completed transaction carried out by the surveyed chilled meat exporters). Export destinations for chilled meat carcasses by the surveyed export traders in Somalia included Oman and United Arab Emirates (UAE). Many (5) of the six exporters interviewed traded in chilled sheep and goat meat, compared to just two each for camel meat and beef. One company exported all types of chilled meat while the common pattern was for a company to export just one or two types of chilled meat.

Table 16. Marketing costs, revenues and gross profits/tonne from chilled goat meat export for recently completed transactions (December 2007 to January 2008)

	Exporter					Average
	A*	B	C	D	E	
Export destination	UAE	UAE	UAE, Oman	UAE, Oman	UAE, Oman	
Lot size (number)	159.0	2287.0	1555.0	1130.0	1800.0	1386.2
Carcass weight produced (tonne)	1.2	18.0	13.2	8.5	11.7	10.5
Revenue (USD)						
Revenue from sale of carcasses	3442.5	3420.6	3548.1	3215.1	3500.0	3437.5
Revenue from sale of hides and skins	145.0	158.7	88.6	168.8	169.2	144.8
Revenue from sale of offal	51.7	49.6	40.0	84.5	29.9	48.5
Total revenue (USD)	3639.2	3628.8	3676.7	3468.4	3699.1	3622.4
Variable costs (USD)						
Costs of procuring slaughter stock						
Purchase of slaughter stock	1897.5	1819.4	1687.0	1903.8	2203.1	1886.9
Slaughter stock loading and unloading	45.00	0.0	0.0	0.0	0.0	1.027
Search costs	0.0	8.222	2.348	5.529	0.0	4.297
Broker fees	0.0	0.0	0.0	0.1176	0.0	0.01901
Market levies	12.50	0.0	0.0	0.1176	0.0	0.3042
Feed and water costs	14.17	13.61	53.03	11.76	0.0	20.19
Movement permits	0.0	0.0	0.0	23.53	0.0	3.802
Subtotal	1969.2	1841.3	1742.3	1944.8	2203.1	1940.1
Costs of meat processing and packaging						
Value of rejected animals/carcasses	0.0	1.6	3.3	9.4	0.0	2.9
Slaughter and flaying fees	46.7	0.0	0.0	0.0	0.0	1.1
Certification costs	8.3	5.6	7.6	0.0	4.7	5.0
Packaging costs	50.0	31.7	44.3	46.8	62.8	44.7
Costs of exporting chilled meat						
Transport cost to the airport	25.8	20.9	23.2	24.7	0.0	17.5
Airfreight fee	1120.8	1137.4	996.2	1191.1	1,000.0	1079.7
Export levies	49.2	38.4	43.9	51.4	76.9	50.7
Other official costs before exports	0.0	0.0	0.0	0.0	15.4	3.4
Other unofficial costs before exports	7.5	8.2	7.0	6.1	0.0	5.7
Import taxes	25.8	27.7	23.2	0.0	10.7	18.3
Commission to importing country agent	0.0	29.2	0.0	0.0	0.0	10.0
Other costs in importing countries	104.2	0.0	92.7	0.0	0.0	25.6
Commission paid to agent	0.0	0.0	0.0	33.3	0.0	5.4
Subtotal	1333.3	1261.8	1186.1	1306.6	1,103.0	1216.4
Total variable costs/lot (USD)	3407.5	3142.0	2983.6	3307.6	3,373.6	3221.1
Gross profit/tonne (USD)	231.7	486.8	693.1	160.7	325.6	401.4
Gross profit margin (%)	6.4	13.4	18.9	4.6	8.8	11.1

Source: Survey data

*Company A outsourced slaughter services and procured slaughter stock through agents of exporters while other companies used common slaughterhouses on cost-sharing basis and procured slaughter stock directly from small-scale traders. The names of the companies are undisclosed for confidentiality.

Table 17. Marketing costs, revenues and gross profits/tonne from chilled sheep meat exports for recently completed transactions (December 2007 to January 2008)

	Exporter				Average
	A*	B	C	D	
Export destination	UAE	UAE	UAE, Oman	UAE, Oman	
Lot size (number)	10.0	23.0	50.0	70.0	38.3
Carcass weight produced (tonne)	0.1	0.2	0.5	0.5	0.3
Revenue (USD)					
Revenue from sale of carcasses	2880.0	3560.0	3200.0	3456.0	3329.2
Revenue from sale of hides and skins	10.0	145.0	82.0	168.0	119.2
Revenue from sale of offal	30.0	25.0	34.0	84.0	51.5
Total revenue (USD)	2920.0	3730.0	3316.0	3708.0	3500.0
Variable costs (USD)					
Costs of procuring slaughter stock					
Purchase of slaughter stock	1440.0	1650.0	1436.0	2010.0	1690.0
Slaughter stock loading and unloading	40.0	0.0	0.0	0.0	3.1
Search costs	0.0	10.0	2.0	60.0	25.4
Broker fees	0.0	0.0	0.0	0.0	0.0
Market levies	0.0	0.0	0.0	0.0	0.0
Feed and water costs	50.0	25.0	20.0	0.0	15.4
Movement permits	30.0	0.0	0.0	0.0	2.3
Subtotal	1560.0	1685.0	1458.0	2070.0	1736.2
Costs of meat processing and packaging					
Value of rejected animals/carcasses	0.0	0.0	0.0	0.0	0.0
Slaughter and flaying fees	40.0	0.0	0.0	0.0	3.1
Certification costs	20.0	5.0	24.0	24.0	20.8
Packaging costs	30.0	30.0	30.0	38.0	33.1
Subtotal	90.0	35.0	54.0	62.0	56.9
Costs of exporting chilled meat					
Transport cost to the airport	20.0	20.0	22.0	22.0	21.5
Airfreight fee	900.0	1140.0	900.0	976.0	966.2
Export levies	40.0	40.0	40.0	242.0	117.7
Other official costs before exports	0.0	0.0	0.0	0.0	0.0
Other unofficial costs before exports	10.0	10.0	6.0	8.0	7.7
Commission to importing country agent	0.0	30.0	0.0	0.0	4.6
Other costs in importing countries	80.0	0.0	84.0	58.0	60.8
Commission paid to agent	0.0	0.0	0.0	36.0	13.8
Subtotal	1070.0	1270.0	1074.0	1366.0	1216.2
Total variable costs/lot (USD)	2720.0	2990.0	2586.0	3498.0	3009.2
Gross profit/tonne (USD)	200.0	740.0	730.0	210.0	490.8
Gross profit margin (%)	6.8	19.8	22.0	5.7	14.0

Source: Survey data.

* Company A outsourced slaughter services and procured slaughter stock through agents of exporters while other companies used common slaughterhouses on cost-sharing basis and procured slaughter stock directly from small-scale traders. The names of the companies are undisclosed for confidentiality.

Table 18. Marketing costs, revenues and gross profits/tonne from chilled beef and camel meat export for recently completed transactions (December 2007 to January 2008)

Export destination	Camel meat			Beef
	F	C	Average	C
	Saudi Arabia	UAE, Oman		UAE, Oman
Lot size (number)	78.0	4.0	41.0	30.0
Carcass weight produced (tonne)	7.0	0.4	3.7	3.2
Revenue (USD)				
Revenue from sale of carcasses	3600.0	3737.5	3607.4	3266.9
Revenue from sale of hides and skins	11.1	10.0	11.1	46.9
Revenue from sale of offal	10.0	10.0	10.0	8.4
Total revenue (USD)	3621.1	3757.5	3628.5	3322.2
Variable costs (USD)				
Costs of procuring slaughter stock				
Purchase of slaughter stock	1555.6	1395.0	1546.9	1308.8
Slaughter stock loading and unloading	0.0	0.0	0.0	0.0
Search costs	0.0	2.5	0.1	0.3
Broker fees	0.0	0.0	0.0	0.0
Market levies	0.0	0.0	0.0	0.0
Feed and water costs	0.0	50.0	2.7	78.1
Movement permits	0.0	0.0	0.0	0.0
Subtotal	1555.6	1447.5	1549.7	1387.2
Costs of meat processing and packaging				
Value of rejected animals/carcasses	0.0	0.0	0.0	0.0
Slaughter and flaying fees	0.0	0.0	0.0	0.0
Certification costs	1.4	5.0	1.6	15.6
Packaging costs	55.7	100.0	58.1	93.8
Subtotal	57.1	105.0	59.7	109.4
Costs of exporting chilled meat				
Transport cost to the airport	171.4	25.0	163.5	3.1
Airfreight fee	1053.0	1050.0	1052.8	1000.0
Export levies	63.7	45.0	62.7	5.6
Other official costs before exports	0.0	0.0	0.0	0.0
Other unofficial costs before exports	0.0	7.5	0.4	0.9
Import taxes	0.0	25.0	1.4	3.1
Commission to importing country agent	102.9	0.0	97.3	0.0
Other costs in importing countries	0.0	97.5	5.3	12.2
Commission paid to agent	0.0	0.0	0.0	0.0
Subtotal	1391.0	1250.0	1383.4	1025.0
Total variable costs/lot (USD)	3003.7	2802.5	2992.8	2521.6
Gross profit/tonne (USD)	617.4	955.0	635.7	800.6
Gross profit margin (%)	17.1	25.4	17.5	24.1

Source: Survey data

*Company A outsourced slaughter services and procured slaughter stock through agents of exporters while other companies used common slaughterhouses on cost-sharing basis and procured slaughter stock directly from small-scale traders. The names of the companies are undisclosed for confidentiality.

Based on the total number of carcasses exported during the last four years, 5 of the 6 exporters were large, and one was small. Two organizational forms of chilled meat export businesses appear, based on the ownership of slaughterhouses: those that did not own slaughter facilities but outsourced slaughter services for a fee, and those that owned slaughterhouses. Two main comments arise from the results:

- Exporters with slaughterhouses were only using a tiny fraction of their potential capacity, and possibly slaughter for domestic market as well;
- There is substantial variation in quantities exported both across exporters and in different years, and the reasons for these differences are not immediately clear.

Meat carcasses represented 95% of the total revenue earned while hides, skins and offal accounted for 5%. Hides, skins and offal were usually sold locally. Hides and skins are usually dried and later exported to the Middle East. Prices received for meat ranged between USD 3267 for beef to USD 3607/t for camel meat. These prices compare well with APEDA Agri-Exchange data¹⁶ which indicates that in 2007 imports of sheep and goat meat to Oman from Somalia totalled 1532.8 t valued at USD 5,669,527 which implies an average price of USD 3718.4/t. However, the nature and pattern of evident price variation across exporters requires further investigation.

Three major variable cost items appear for chilled meat exporters, based on major stages in chilled meat production and marketing: costs of procuring slaughter stock, meat processing and packaging costs, and export costs. Costs associated with procurement of slaughter stock and associated transactions costs¹⁷ represented 60%, 58%, 52% and 55% of variable costs of chilled meat export for goats, sheep, camels and cattle (respectively). For all exporters, the major component of the cost of procuring slaughter stock was purchase.

Costs of chilled meat processing and packaging included the value of rejected animals and/or carcasses, slaughter and skinning fees, certification fees and packaging fees. These costs accounted for less than 5% of the total variable costs in all cases. Costs of transporting chilled meat to the airport, air freight, export levies, official and informal costs, import taxes and commission agents' fees together accounted for 38%, 40%, 46% and 41% of the variable costs of chilled meat export of goats, sheep, camels and cattle (respectively). The cost of airfreight was the major component of this category of variable costs.

Observed gross profits and gross profit margins per tonne for export of chilled camel meat and beef were much higher than for export of chilled goat and sheep meat (Tables 18–20).

4.3 Determinants of gross margins

To determine the factors influencing the levels of gross margins realized by animal traders in the meat export value chain in Somalia, OLS regression was used. Only gross margins from the last lot of shoats sold by small-scale traders were subjected to the OLS regression analysis owing to insufficient number of observations for other types of livestock, and other value chain actors. The gross margins/kg live weight of shoats sold were regressed against a set of explanatory variables including buyer type, number of sheep and goats sold, lot species composition (% goats), form of business ownership, age, years of experience and level of education of livestock trader.

Table 19 presents the results of the OLS regression. The model accounted for 33% of the variability of the gross margins among the surveyed small-scale traders and was significant at 5% level. The number of animals sold had a positive significant effect on the level of gross margins suggesting economies of scale in the activity of marketing of shoats slaughtered for export by the small-scale traders. Gross margins/kg also tended to be higher if the proportion of goats in the lot was high. In addition, small-scale traders who sold animals directly to importers realized higher returns (as opposed to selling to other market agents) suggesting that the small-scale traders benefited from reduced marketing costs if the number of intermediaries between them and exporters is minimal.

16. <http://agriexchange.apeda.gov.in/IntTrade/ImpCtryDetails.aspx?gcode=0402&ctryc=OMN&ctryn=Oman>.

17. Loading and unloading costs, search costs, broker fees, market levies, feed and water costs and movement permits.

Table 19. Regression results on determinants of gross margin/kg live weight

	Coefficient	Std. error	t	P>t
Constant	-2.33***	0.78	-2.98	0.01
Percentage of goats in the herd	1.91***	0.64	3.00	0.01
Number of animals	0.00***	0.00	3.15	0.01
Selling directly to a meat exporter (I=Yes)	0.25*	0.14	1.81	0.08
Level of education of trader	0.00	0.01	-0.35	0.73
Age of trader	0.12	0.10	1.19	0.25
Experience	0.00	0.01	-0.11	0.91
Form of business ownership (sole proprietor)	0.23	0.15	1.53	0.14
Form of business ownership (share company)	0.25	0.19	1.30	0.21
Number of Observations	31			
F(8,22)	2.82	Probability > F=0.03		
R2	51%			
Adjusted R2	33%			
Root MSE	0.28141			

*, **, and *** indicate statistical significance at 1, 5 and 10 per cent levels, respectively.

4.4 Challenges faced by Somali chilled meat export value chain actors

An analysis of uncertainties faced by the value chain actors' was carried out during the rapid appraisal. In addition, during the formal survey, information was sought on the major constraints faced by the various types of marketing agents and also brokers.

Uncertainty in the chilled meat export value chain

The rapid appraisal identified seasonal changes in supply of slaughter animals as a widely-recognized source of uncertainty in the chilled meat export value chain. Reduced numbers of slaughter animals (as in the dry season) raises unit costs due to high cost of animals themselves and also reduced slaughterhouse capacity utilization. In response, some exporters reported mitigating strategies, one of which is to buy livestock during the wet season and feed them through to slaughter in the dry season. Other exporters purchased animals from more distant areas, and still others diversified into different types of chilled meat (sheep, goats, camels and cattle) or different business activities (such as trading in non-livestock products) to keep the company running during periods of low volumes of chilled meat for export.

Demand changes in importing countries were also discussed with value chain agents. Seasonal demand patterns are usually attributed to the important Muslim festivals of *Ramadan*, *Haji* and *Maulid*, and to the reduced demand associated with the hot months of April–September. Other uncertainties faced by actors in the chilled meat export value chain include fluctuations in items of cost (freight and delivery), lack of security along the roads, vehicle breakdowns, and illegal actions by authorities (arbitrary impounding of trucks, or levying of informal fees and taxes).

From the profitability analysis, it appears that exporters placed particular emphasis on maintaining good relations with their importer client, to the point of incurring periodic or occasional trading losses in order to maintain supplies throughout the year, entailing the need to serve fluctuating demand. However, there appears to be a risk to all value chain actors associated with opportunism on the part of importers was also noted, and is evidence of market power amongst importers.

4.5. Perceived constraints in the chilled meat export value chain

The two most important constraints perceived by chilled meat export value chain actors (Table 20) were high domestic livestock prices and low demand in the importing countries. This observation is consistent with the results on costs and returns for small-scale traders and chilled meat exporters. Moreover, the two identified constraints are linked: high prices depress demand in the importing countries. Brokers reported that their most important constraints were low demand in importing countries and poor quality animals, which is also likely to be a statement of cause-and-effect, as there is likely to be low demand for poor quality meat. It is not clear to what extent seasonal effects of both supply and demand were considered by the value chain actors in responding to these questions. Significant numbers of small-scale traders and brokers cited 'other' constraints on exports, further reflecting the variation amongst these agents that was found to exist in regard to cost structure and transaction practice.¹⁸

Table 20. Percentage of small-scale traders and brokers reporting the most important constraints to the export of live animals and chilled meat

Constraint	Small-scale traders			Brokers		
	Most important	2nd most important	3rd most important	Most important	2nd most important	3rd most important
High local prices	38	14.6	10.4	0	0	0
Low demand in importing countries	21	18.8	8.3	22	22	0
High taxes	13	6.3	10.4	0	6	6
Poor quality animals	6	4.2	8.3	17	6	0
Limited access to credit	4	6.3	12.5	0	0	0
Unstable prices	2	25.0	2.1	11	11	0
Markets lack infrastructure/facilities	2	4.2	2.1	0	6	11
Delayed or non-payment	0	2.1	0	6	0	6
No internationally recognized certification system	0	0	4.2	0	0	0
Absence of grades and standards	0	0	0	0	6	0
No system of dispute settlement	0	0	0	0	6	0
Others	13	13	21	11	16	28

Further up the value chain, responses adopted a more sophisticated tone. All agents of exporters indicated low demand in importing countries as the most important constraint whereas high local prices and location of slaughterhouses in very far off places were reported as constraints of secondary importance by a total of about 65% of actors (Table 21). Two exporters indicated the lack of an internationally-recognized system of certification as the primary constraint while the rest considered the main constraints to be low demand in importing countries, high local prices, unstable prices and high taxes.

Table 21. Percentage of exporters and their agents reporting the most important constraints to the export of live animals and chilled meat

Constraint	Agents of exporters			Exporters		
	Most important	2nd most important	3rd most important	Most important	2nd most important	3rd most important
Low demand in importing countries	100	0	0	17	17	0
High local prices	0	33	0	17	17	17
Slaughterhouse far away	0	33	0	0	0	0
Markets lack infrastructure/facilities	0	0	33	0	0	17
Unexpected export barns	0	0	33	0	0	0
Unstable prices	0	0	0	17	0	17
High taxes	0	0	0	17	0	0
No internationally recognized certification system	0	0	0	33	0	0
Limited access to credit	0	0	0	0	17	0
Delayed or non-payment	0	0	0	0	17	0
Lack of strong government to support trade	0	0	0	0	17	0
Poor quality animals	0	0	0	0	0	17

¹⁸ See Table 13.

4.6 Market trends and agents' future plans

Agents' perceptions of annual (year on year) changes in market volumes of animals are presented in Figure 4. The explanations given for increases and declines encountered are presented in Tables 22 and 23, respectively. The proportion of small-scale traders and agents of exporters reporting increased volumes of animals handled were highest in 2005 and 2006. These years correspond to exporters' reports (1 in 2005 and 2 in 2007) of increased volumes of animals handled (Figure 4). During the same period, just a handful of the small-scale traders (4%) and none of the agents of exporters reported a decline in the number of animals handled: a large number of exporters (3–5) reported no change for that period. A decline in the number of animals handled was reported by exporters in 2007, and this trend was also reported by most small-scale traders and all of the agents of exporters. This period corresponds to import bans on Somali chilled meat (December 2006–December 2007).

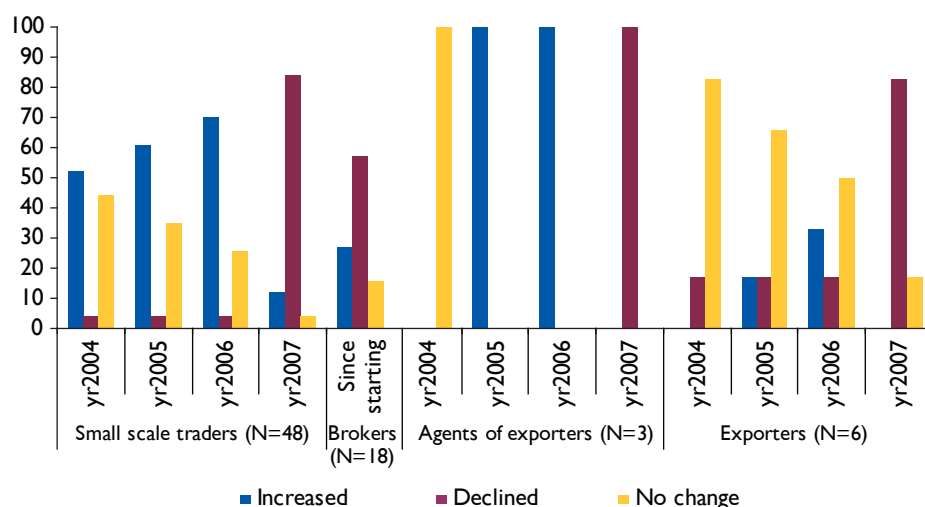
Table 22. Reasons for increases in volumes of animals handled

	Small-scale traders (N=35)	Brokers (N=5)	Agents of exporters (N=3)	Exporters (N=2)
Increased demand/lifting of import bans	80	60	100	50
Availability of animals	6	0	0	0
Profitability	9	0	0	0
Scarcity of chilled meat	6	0	0	0
Affordability of animals	3	0	0	0
No exchange rate fluctuation	3	0	0	0
Improved information flow	3	0	0	0
Better security	3	0	0	0
Preference for Somali animals	0	40	0	0
Dubai market accessible	0	0	0	50

Table 23. Reasons for declines in volumes of animals handled

	Small-scale traders (N=41)	Brokers (N=12)	Agents of exporters (N=3)	Exporters (N=5)
Export ban	85	58	100	80
Insecurity	10	17	0	0
Lack of freighter services	5	0	0	20
Local currency appreciation	5	25	0	0
Lack of demand for species other than goats	0	8	0	0
Civil war	0	8	0	0
Drought	0	17	0	0
Competition from other slaughterhouses	0	0	33	0
High freight cost	0	0	0	20
Low prices	0	0	0	20
Others	5	8	0	0

Declines in volumes of slaughter animals handled (see Table 23) were most frequently attributed by all value chain actors to import bans (often instituted due to outbreaks of transboundary diseases such as Rift Valley Fever), or to related items (e.g. 'accessibility of the Dubai market'). Subsequent lifting of these bans was the most frequently cited reason for increases in volumes of animals handled (Table 22).

Figure 4. Reported trends in volumes of animals handled by intermediaries dealing in animals slaughtered for export in Somalia

A few value chain actors (10% of the small-scale traders, a single agent of exporter and also a single exporter) reported having made some major expansions during the preceding 3 years (Table 24). For the future, the majority of all value chain actors wished to expand their operations, mostly by scaling up current activities (50% of small-scale traders; 2 of the 3 exporters surveyed); and processing by-products (2 of the 6 exporters surveyed). Constraints to expansion cited frequently included the lack of financial capital (33–40% of those surveyed).

Table 24. Reported expansions and future plans (not upgrading per se)

	Small-scale traders (% Yes)	Agents of exporters (% Yes)	Exporters (% Yes)
Major expansions in the previous 3 years	10	33	17
Nature of expansion			
Increase in number of animals bought	2	0	0
Expansion of catchments area	8	0	0
Bought a lorry	0	33	0
Export to many countries	0	0	17
Build a modern slaughterhouse	0	0	17
Planned future expansions	52	100	67
Nature of planned expansion			
Scale up current activities	50	67	0
Venture into export business	2		0
Venture into import	0	33	0
Further processing of meat/meat products (sausages, hamburgers etc.)	0	0	17
Processing by-products e.g. bone and blood	0	0	33
Processing skins	0	0	17
Establishing farms to raise animals	0	0	17
Build a slaughterhouse	0	0	17
Factors constraining expansion			
Capital/Financing	40	33	33
Low demand	19	67	0
Insecurity	20	0	50
Lack of a support agency	0	67	0
Shortage of available aircraft	0	0	17

5 Conclusions and recommendations

5.1 Overview

Livestock is a significant economic sector, source of livelihood, and generator of exports for the Somali. It has also proven remarkably resilient during the country's turbulent recent political history, and persistent despite externally-imposed trade bans. Export of meat and by-products, as opposed to live animals, offers the dual benefits of value addition and avoidance of export restrictions due to animal disease. Chilled meat exports serve high-value markets, and require a complex and multifunctional, and long, value chain for delivery. This study characterizes these value chains so as to identify and inform the development of strategies to improve the efficiency of the Somali chilled meat export value chain.

The profile of the Somali chilled export meat value chain features producers, brokers, small-scale traders, agents of exporters and exporters. These actors may operate in long chains, or shorter ones omitting one or more functions. Small-scale traders play an assembly role, but many (80%) sell directly to exporters, while brokers operate throughout the chain. To this list may be added importers resident in export destination countries, and other value chain actors located abroad that were beyond the scope of this study.

Expert consultation revealed that for most importing countries, Somali chilled meat exporters dealt with just a small number of importers. The value chain is male-dominated. At processing and exporter stages, most firms are partnerships. Small-scale traders have few assets, while agents of exporters have transport and communication equipment. There is some evidence of considerable working capital employed by processors, but this topic requires further study. Most actors handle sheep and goats, with far fewer handling cattle, and just a few dealing with camels. A significant number of actors are engaged in businesses other than livestock, and this is likely to influence their transaction behaviour.

Surveys revealed that a well-established live animal grading system is in use in the chilled export meat value chain, focused on age, weight and body condition. The system is well known to actors at all chain stages and is consistently applied to all species. Although able to be subjected to limited statistical analysis here, actors' rankings of relative importance of product and live animal attributes were also very consistent. Notably, breed and animal conformation play minor roles.

Exporters revealed themselves to be very well aware of export market requirements. However this awareness is not apparent amongst the other actors, beyond basic requirements (e.g. Halal slaughter). Importing countries' preferences for species (goats over other species in several countries) also appear to be well known. Other than amongst exporters, knowledge of regulations and required documentation was poor. These indications of information asymmetry constrain opportunities for value addition by value chain actors.

Trading relationships are longstanding: averaging eight years between small-scale traders and exporters and over three years between exporters and their agents. All actors describe their business relationships as 'regular'. Several key roles are apparent for brokers (stock assembly, information provision, guarantee of tenure and payment), and they also serve to promote market access for the most marginalized of producers.

Actors overwhelmingly claim to set their own prices prior to sale, and although cash-on-the-spot dominates transactions with agents of exporters, exporters themselves operate delayed payment systems and the allocation of the costs of this informal credit is not clear. Contrary to expectations, no clear seasonal patterns of sales volume were revealed from surveys of the value chain actors. In particular, these were not associated with religious events. However, most chain actors report fluctuations in product volume, and these reports were found to be very consistent across value chain actors. Factors causing the fluctuations were also consistently cited: animal disease-related trade bans are seen to have played a central role.

Access to information is reported to be good for all actors, but apparently across a limited range of variables. In particular, small-scale traders, brokers and agents of exporters all claim to have poor access to carcass price information, and details of health and safety and quality requirements for the export markets. For the information that is available, the study was not able to pass judgement on its quality (particularly objectivity and accuracy, and timeliness).

Examination of marketing margins prompted three main conclusions. First, variable costs in the value chain are dominated by costs of livestock purchase, and transactions costs. Transaction costs largely comprise of search costs (despite the prominence of brokers), payment to brokers and transport costs. Second, marketing margins are generally low (3–12% of the sales price in the last completed transaction among small-scale traders and exporters) and were actually revealed to have been negative for some of the surveyed agents (14% of the small-scale traders). Third, the nature of costs differed amongst species to the extent that marketing margins (per tonne) are clearly higher for camel and cattle than for sheep and goats. Overall, considerable variety was observed in profitability which suggests a range in competitiveness amongst incumbent value chain actors. However, the distribution of profitability amongst value chain actors, at the same or different stages of the chain, is likely to be influenced by spatial and temporal variation, which was not studied here. Air transport of chilled meat and associated transaction costs are, as expected, a significant cost item for exporters (some 35–46% of variable costs).

The relatively low gross profit margins identified for small-scale traders (<7.5% of sale price for 55% of the small-scale traders) bring into question their long-term viability. It is however important to note that these traders make up for the small margins with the high rates of turnover (estimated to be 5344 goats, 531 sheep, 161 camels and 40 heads of cattle per trader in 2006). Indeed, most of these traders intend to increase their scale of operation, and have also been in business for some time, which implies that the small-scale is not necessarily transitional. Given the key role of small-scale traders in the chilled meat value chain, further study of their performance and resilience is needed. In particular, the dynamic adjustment path they would likely follow in expanding traded volumes, and availability of working capital and services, are of interest in terms of both their own financial returns and the impacts on producers.

Competitive pressures for entry and exit would appear to be present, as evidenced by variation in profit margins and comments during rapid appraisal, and the observation that numerous value chain actors are currently inactive. However, it is also notable that actors are clearly prepared to sustain short-term losses (as evidenced by negative margins) to remain in the chilled meat export business, for a variety of possible reasons identified in this study. These include seasonal fluctuations in demand, long-lasting and clan-based trading relationships, and the small numbers of importers in some export markets. Rapid appraisal interviews support the presence of long term incentives to maintain commerce with a very limited number of contacts in the importing countries: this is indicative of market power and limited entry in the importing countries.

Unpredictable seasonal changes in supply of slaughter animals, which occasions low slaughterhouse capacity utilization, were cited as a major problem/risk during the rapid appraisal. The low slaughter house capacity utilization in the light of asset specificity of slaughter capacity may act as a deterrent to investment by chilled meat value chain actors. It is notable that many such actors are engaged in other businesses, and so seek to spread risks and seek synergies (e.g. with other livestock operations), while allocating costs across limited fixed assets. This strategy appears to be well adapted to the observed persistence in the chilled meat trade, despite some negative gross profit margins.

Regression analysis indicates that, for small-scale traders, selling sheep and goats directly to chilled meat exporters is associated (albeit at 10% levels of statistical significance) with higher levels of gross margins, than sales to other chain configurations. Other positive influences on returns to small-scale traders included the proportion of goats in the herd, and the number of animals sold. Profitable goat specialization reflects the reported consumer preference in several chilled meat importing countries, and advantages from the number of animals sold (i.e. scale of operation) indicate some economies of scale (in particular, many transaction costs are fixed in nature). It is notable that age and experience, and form of business organization, were found not to be significantly associated with marketing margins. These results have important implications for specialization within the value chain, for scale of operation, and for the choice of channel.

Survey questions centred on perceptions of uncertainty, and its effects, identified a role for alternative business forms and relationships, and purchasing strategies. Variation in both supply and demand tends to be offset by strategies such as purchasing out of season with retention on feed, or spatial diversification of purchases. Other mitigation strategies were reported, including diversification of business outside livestock, as well as into numerous livestock species. Exporters apparently place particular emphasis on maintenance of relations with importers, to the extent of operating at a loss (at least in the short term) to maintain secure market access. It should be noted that these perceptions of uncertainty may be poorly associated with the reality of variation in key variables in the export chilled meat value chain, and further research is needed to identify and analyse these factors, and their impact on decisions.

Most value chain participants identify low demand and high purchase prices as major constraints to export chilled meat trade development. These two factors are inter-related and interpretation of this result is difficult. Moreover, these stated perceptions have not been linked to behaviour by any analytical model: feed costs, for example, are an intuitively-appealing constraint that can be linked to actors' financial performance. A lack of market infrastructure was also identified, as was the lack of an internationally recognized carcass certification system. Conditions in importing countries, and indeed in other countries that may be served from importing hubs, were not addressed in this study. Seasonal fluctuations, and interactions with imports from other countries (particularly low-cost suppliers) are all likely to fashion demand in importing countries. It is however clear that one strategic approach that Somali market actors have adopted in response, is the maintenance of long-term trading relationships at all costs.

Although few surveyed actors had expanded operations in recent years, almost all planned to do so. Means of planned expansion featured, in general, expanding current activities rather than via innovations and/or new investments. Actors identified low demand and shortage of capital as the major constraints..

5.2 Value chain upgrading issues

Factors constraining financial performance throughout the Somali export chilled meat value chain are reported to include the high cost of animals, and high transaction costs. Limited evidence on trader margins suggests that these are not excessive (i.e. no greater than transport costs) and several cases of negative margins were reported. Some evidence supports scale and specialization as positive influences on trader margins. Preliminary evidence suggests that price and quality grades are positively associated, yet per-animal transaction continue to dominate. Taken together, these results suggest a significant role for value addition in contributing to profitability (and hence incomes) in the value chain. This study did not consider producer incomes, but similar comments are likely to apply.

Some prerequisite conditions for value addition through presentation for sale of animals of superior condition are already in place (notably a working and widely-recognized grading system), but others are not. Specifically, value chain actors' apparently poor knowledge of demand in importing countries, and of administrative procedures in importing countries, is likely to have obscured the signals that would enable value addition.

A cost item restricting exporters' margin is the high costs of airfreight of chilled meat to export destinations. Noticeably, this was not identified as a problem during raid appraisal. This can be addressed with efficiency-enhancing changes such as improved capacity utilization, particularly by filling aircraft space more completely or by using packaged products rather than (more bulky) carcasses, or by alternatives such as the sea freight, which is more widely used by other chilled meat exporters. These alternatives need further investigation in the Somali context: particularly the risks inherent in transporting product overland for sea freight.

Higher-valued product offers opportunities for increased margins throughout the value chain. This might be addressed by de-boning and fat trimming as specific importers request, or by a focus on high value products through branding and marketing: each featuring both investments and as-yet-unknown cost structures. In the longer term, appellation of origin and registered trademarks supported by high quality disciplinary standards offers possible avenues for upgrading. Although these options are not addressed directly in the current study, some prerequisite conditions were identified, namely the existence of functioning grading systems and enduring linkages to importing actors.

Beyond grading, certification according to product handling practice (e.g. HACCP-type systems) offers a standardized and internationally-accepted approach to food safety concerns for exports and quality management as practiced in retailer-dominated supply chains. As introduction of HACCP entails fixed costs rather than variable costs, it awaits capital input and stronger ties to retailers (as opposed to importers).

5.3 Recommendations for the private sector

A shift toward enhanced value-addition would require a new focus, throughout the value chain, on carcass and live animal conformation, delivery scheduling, and application of specific technologies. Such a focus would need to be supported by the live animal grading system in use, and the consistency with which quality is currently addressed by chain actors. However, the lack of whole-chain knowledge of regulatory information suggests that the detail of retail-level procedural and information requirements may not be well transmitted through the network of Somali chain actors.

The limited information on slaughterhouse numbers, capacity and volumes processed indicates some underutilization of capacity. Improved utilization of fixed assets might be achieved by an agreed rationalization of slaughter services amongst providers and according to the needs of exporters, and joint effort by exporters in serving importers. This would require sharing of information on volumes and market expectations. Fewer slaughterhouses would ease the burden of implementation of new quality control and certification systems. It would also simplify procedures for addressing importer concerns, as there would be fewer slaughterhouses to inspect. However, the regional and clan-specific distribution of meat industry assets and relationships, would present a barrier to such rationalization and cooperation.

The existing network of brokers offers an opportunity for whole-chain adoption of new transaction procedures that would favour value addition on the one hand, and increased volumes on the other. Grading, contracting, supply scheduling and pre-announced prices could be expanded or initiated through the broker network far more easily than if each producer and trader had to be approached and coerced. The incentives offered to brokers by exporters (or via their agents) might include additional hedge fees, or fixed retainer payments for the identification of suitable animals and their diversion from competing uses into the chilled meat export value chain. Although this approach would internalize some potential market failures, it would not address others that brokers' current role corrects: specifically the inclusion of marginal producers and the enhanced coordination of the assembly mechanism.

5.4 Policy recommendations

Based on the characterization offered by this study some limited policy recommendations can be made, mostly contingent on further research. Identified roles for government need special consideration in Somalia, where state apparatus is very weak. This context necessitates, as an early recommendation, an industry identity, and a capacity for industry self-governance and joint action. A key recommendation is that this identity be established and formalized, and its operations defined.

Certification of slaughter facilities as discussed above, can be promoted by government (perhaps local government) in licensing and export approvals, although the specifications for any HACCP system would be agreed between the facility management and the importers. Government action is also needed in identifying diseases of concern to specific importing countries, and establishment of certification procedures to accommodate those concerns and ultimately avoid repetition of trade bans on Somali chilled meat.

To the extent that niche markets can, in future, be established and served, then branding offers a value addition alternative. Where such brands serve to identify products with indigenous Somali characteristics, then protection of trademarks and perhaps local appellation will become necessary. WTO offers facility for such protection, to which government will need to dedicate resources toward securing.

A key industry role would be sharing of information on export prices, perhaps by regular publication of chilled meat trade statistics. This should be backed up by an investigation of import markets, extending to price–quality linkages, carcass grades used, competitive behaviour amongst the small number of importers dealing with Somalia, seasonal demand requirements, and the path of distribution followed by Somali chilled meat on arrival in the Gulf. Distribution of price information would also serve as a benchmark by which producers and traders could judge brokers' performance, and so serve to improve their function in the value chain. Tactical decisions as to which information is 'public' and which 'private' would be a fundamental basis for the industry body to be formed. A communication process amongst the Somali exporters, slaughter providers, and Gulf State importers should be initiated, across a range of topics (quality, safety, seasonal demand patterns).

5.5 Research needs

The role of research, and the identity of appropriate research agencies, needs to be defined in association with the information strategy of the (recommended) industry body. Ideally, externally-funded research would complement that of industry-conducted information delivery, essentially filling gaps and providing analysis, while addressing public policy concerns and opportunities. Topics recommended here would ideally be split along those lines of responsibility.

A vital research issue is the volume of slaughter stock available that is suitable for the chilled export trade, and the factors affecting its supply into the trade. Given agents' widespread commitment to expansion by increased volumes, then industry development would take one of two distinct paths: consolidation of chain actors at each chain stage to best utilize the existing volume of stock; or diversion of stock from domestic uses or from herds maintained by producers. The former path may well exclude those producers that are currently marginal to the system and participate at high cost. The latter has far-reaching implications for domestic food supply and on-farm management. A strategy featuring elements of both development paths may offer the best course.

Information is needed about price–quality relationships in import markets. This would be best addressed by further studies in both domestic and import markets on relationships between prices and (i) grade-relevant attributes (size, weight, age, fat cover) as well as (ii) quality and safety indicators (inspection certificates, HACCP-type certification, packaging) and (iii) value addition steps (deboning, cutting to specification, branding and trademarks). This would serve to evaluate and guide the existing live animal grading system.

Costs throughout the value chain require further study, and particularly the influence on them of uncertainty and variation in seasonal and spatial availability of animals and markets. Scale and specialization have been implicated in the current study for their effects on trader margins, and this should be pursued further to identify incentives for value addition.

Alternative transaction arrangements should be researched. This would entail a participatory approach to specifying existing practice, and identifying its functions and their suitability in the context of international trade in chilled meat to high-value markets. Existing experience in vertical and horizontal joint action would be brought to bear, so as to design pilot programmes. A unique element of this research would be to project new roles for traditional domestic market actors such as brokers.

The distribution of benefits on the value chain remains of substantial policy interest. This study has taken the initial steps of measuring profit margins throughout the chain, but has not addressed allocation of risk, asset specificity for certain agents, nor the potential costs and benefits of joint and whole-chain action in addressing transaction costs throughout the chain. The structure of the Somali export chilled meat value chain offers opportunities (such as competing channels and the presence of brokers) to implement change in the context of improved information and protection of existing interests.

Finally, a logical extension of the existing study is the development of formalized linkages between statements of actors' perceived constraints and risks, and a model of financial and development performance.

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